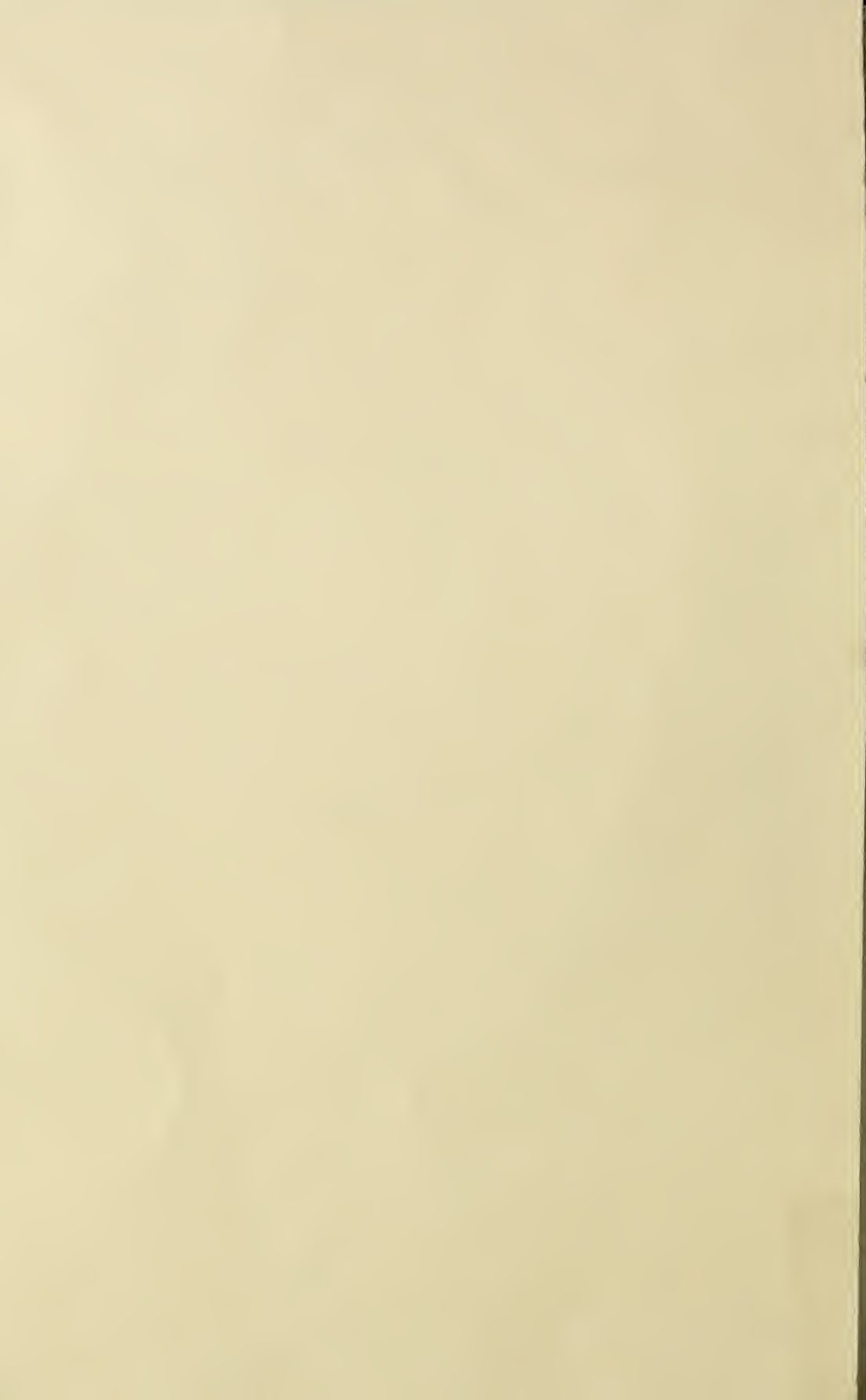


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VOLUME XXIV

NUMBER 8

THE AGRICULTURAL STUDENT

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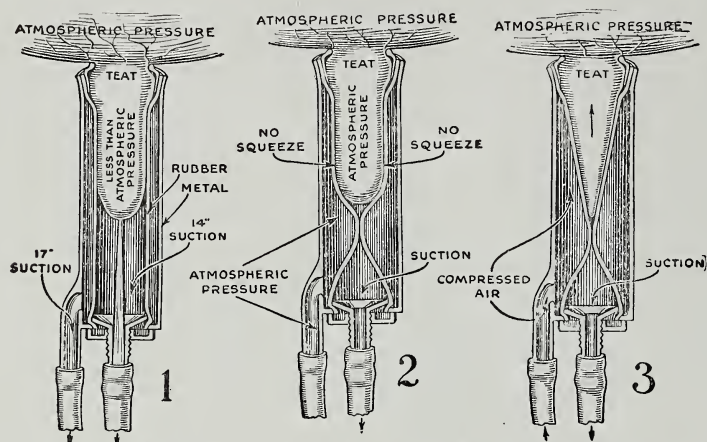
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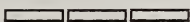
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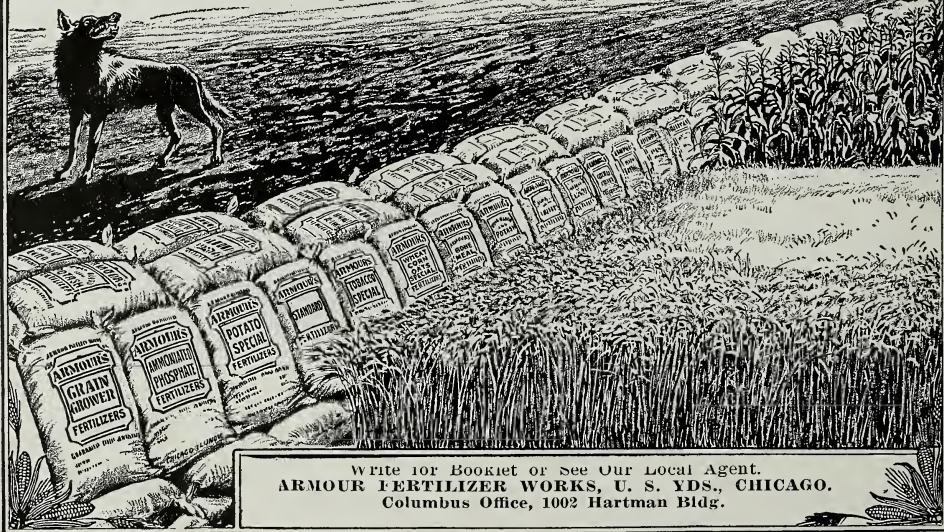
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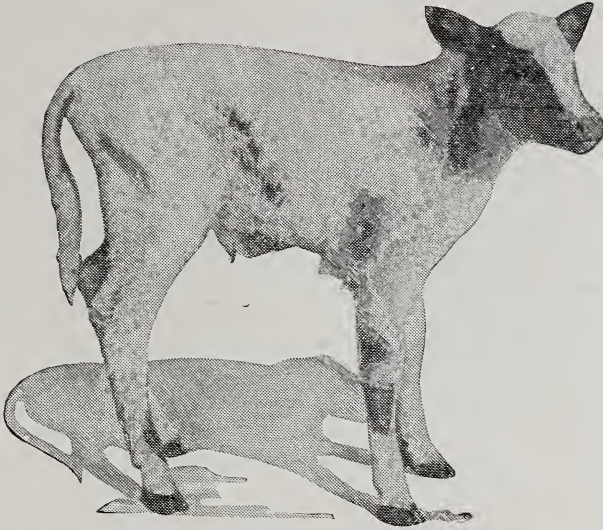
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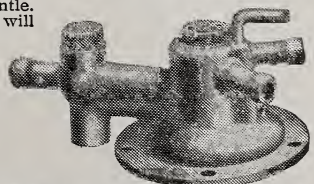
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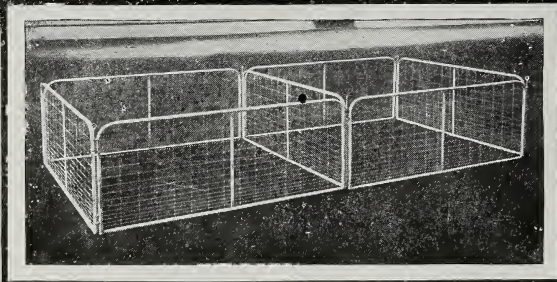
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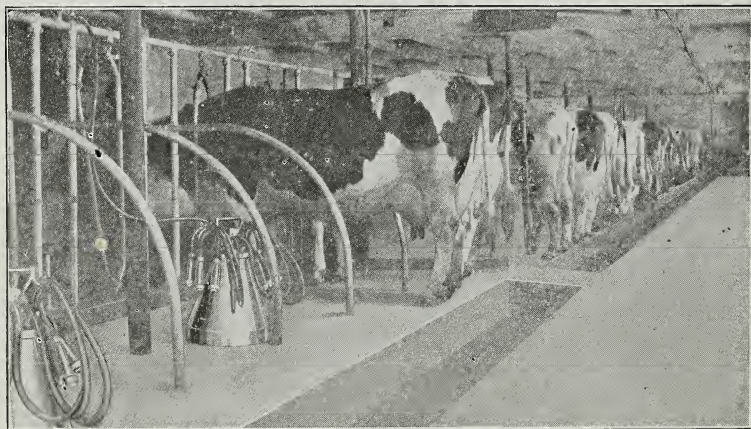
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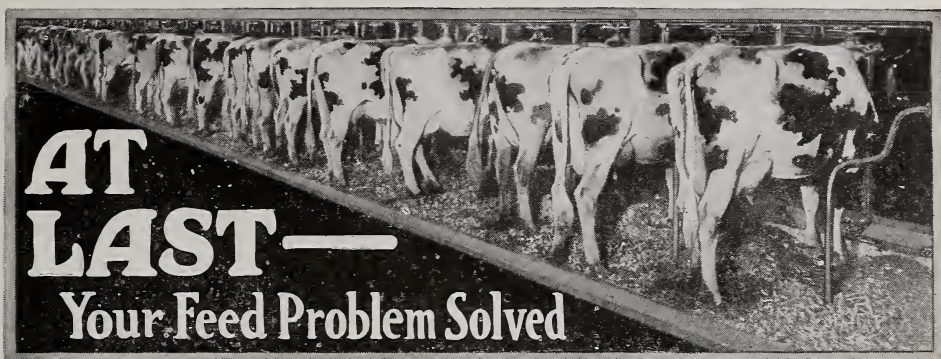
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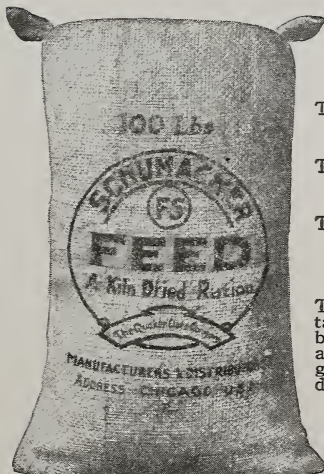
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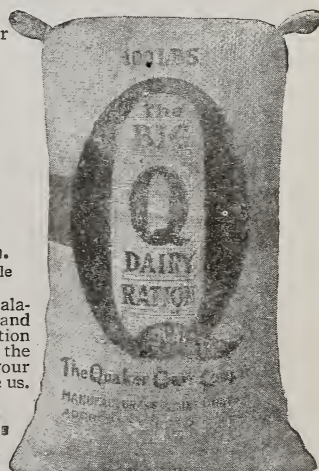
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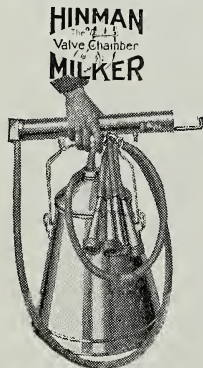
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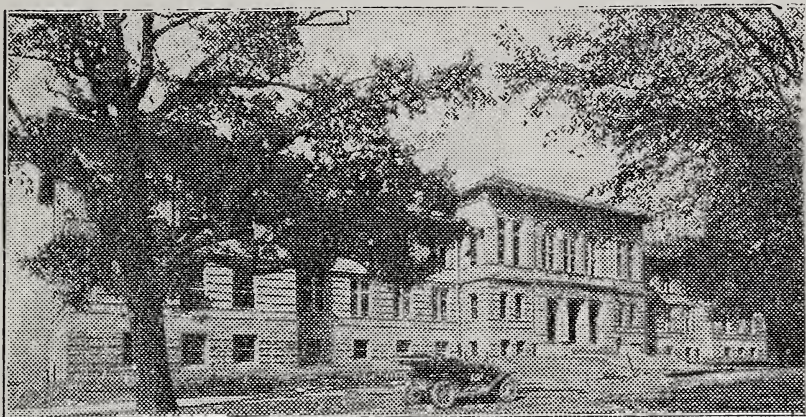
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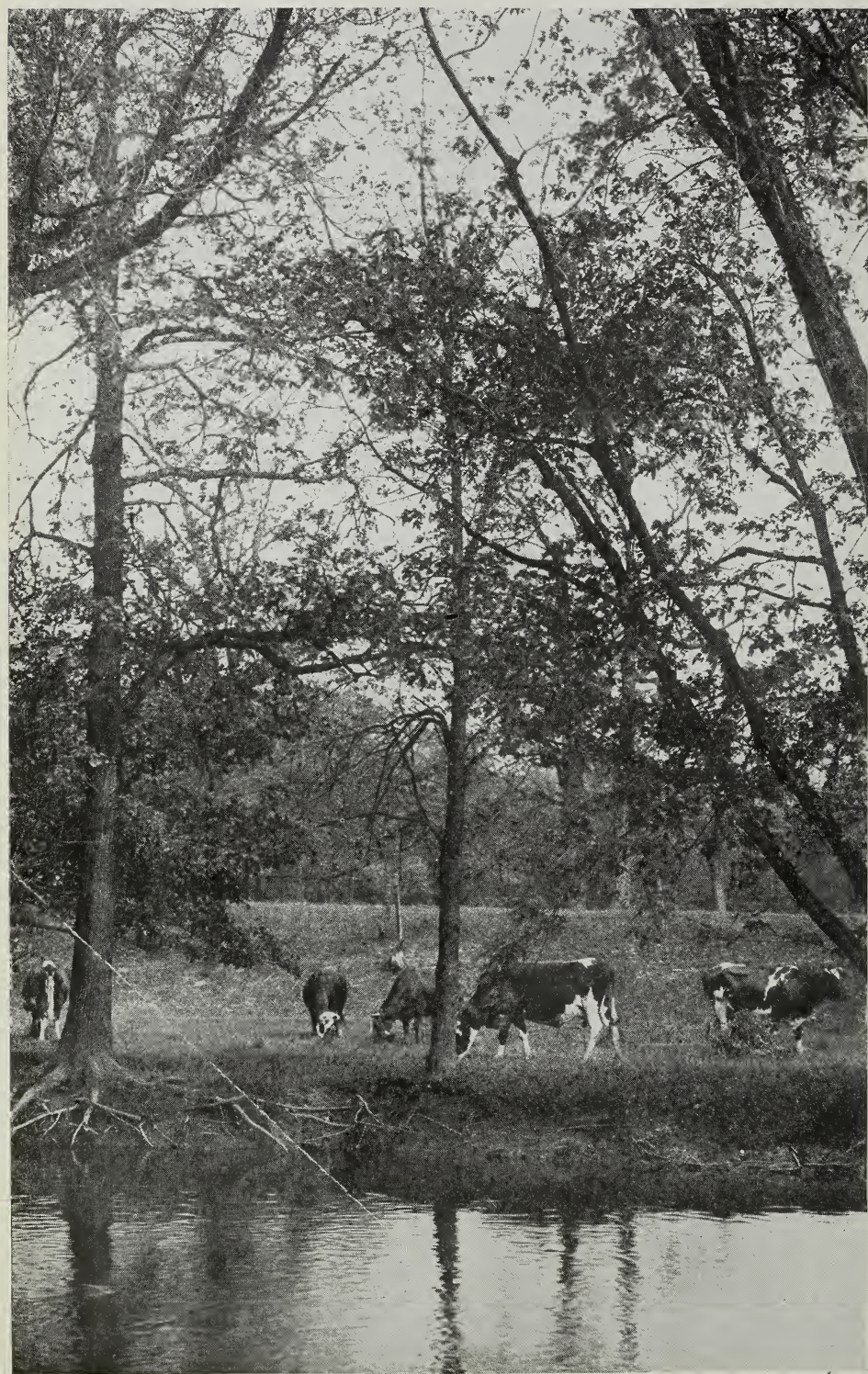


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THE AGRICULTURAL STUDENT

Vol. XXIV.

OHIO STATE UNIVERSITY, COLUMBUS, APRIL, 1918

No. 8

USING MOTOR-DRIVEN TILE-DITCHING MACHINES

**Drainage on Ohio Farms Being Retarded Because of the Lack of Labor;
Problem Being Solved by the Use of Large Machines Adapted
to Community Propositions**

PROF. HARRY C. RAMSOWER, Department of Agricultural Engineering

ADEQUATE underdrainage is the only foundation upon which a fertile soil can be built. Furthermore, successful agriculture cannot be carried on if the soil is not fertile. We are compelled to admit that underdrainage is the most important, the most fundamental factor underlying the business of profitable farming. Fortunately many of our soils are underlaid with a subsoil sufficiently open and porous to permit adequate drainage through natural means. On the other hand, thousands of acres in Ohio must be artificially drained to render them economically productive.

The large open ditch must be resorted to in extensive, level areas to provide outlets for smaller open ditches or for tile drains. In regions, however, where intensive farming is practiced, the open ditch is being abandoned in favor of tile. This may be economically done if the size of tile required does not exceed 24 inches in diameter.

When the city business man considers making an investment he asks himself two questions: (1) is it safe, and (2) will it yield an adequate annual return? Consider drainage in the same way. It costs approximately \$30 to drain 1 acre of land placing the laterals 4 rods apart. The interest on this amount at 6 percent. is \$1.80. An additional bushel of wheat, $1\frac{1}{2}$ bushels of corn, a

couple of bushels of oats, will yield a much greater annual return; in fact, the yearly return is seldom less than 10 percent on the investment and it will vary from 10 to 20 per cent; and frequently is much higher.

Is the investment a safe one? The business man expects that at the expiration of a reasonable term of years he shall be able to recall his loan, or turn his investment, realizing the full original sum in the transaction. The farmer has a right to expect similar results. No farmer would erect a \$3000 house on his farm and expect to sell the land at an equal advance in price. Drainage is a permanent improvement and in this respect presents a case analogous to that of the house. It is, therefore, not possible as a rule to drain wet land that is already under cultivation and expect to realize at once on the cost of the project through the increased value of the land. With very few exceptions, however, we can say that an investment in tile drains will in a very few years increase the value of the land by an amount equal to the original cost of the improvement. Add to this the fact that the annual return is much greater than the ordinary interest rate and we are forced to conclude that drainage is not only a profitable investment, but a safe one as well.

Perhaps we do not drain because

ready money is not available. There are times when it is a sensible thing to go in debt, and if there is any project connected with farm development that will justify an increase in the farm mortgage that project is tile drainage. Many a farmer has helped himself out of debt by going more deeply in debt, to tile drain. We can, I believe, without hesitation make the statement that if lack of drainage is the limiting factor in crop production on land reasonably well situated, one will be justified in borrowing the money to make the needed improvement. But, after all is said and done, the writer feels that the real reason why more tiles have not been laid during the last quarter of a century is that it has been difficult to get labor to carry on the work; and even with an abundance of labor available the task has required so much time and the operation has been so long drawn out when any considerable area was to be drained, that one hesitated to undertake the job. Fortunately, machines are now available by means of which the work of cutting trenches may be quickly and well done, thus eliminating a large part of the drudgery that has always been associated with tile drainage. It should not be called drudgery, for it is always a pleasure to dig a ditch and lay the tile that are almost certain to make the land more productive. Let's call it just hard work.

A traction ditcher propelled by gasoline is perhaps the best type of machine ever devised for digging trenches for tile. Several speeds are possible, the one used depending upon the nature of the soil. Large caterpillar wheels may be supplied and are much to be desired in soft ground. Such a machine will cut trenches either 11 or 14 inches in

width and up to $4\frac{1}{2}$ feet deep. It can cut its way through a very hard soil—it will lift boulders the size of a man's head out of the ground with little difficulty. If larger stones are encountered it is necessary to lift the wheel, move the machine forward and dig the stone out by hand or cut the trench around the stone. The operator can proceed with the machine, not having to wait until the stone has been removed. It is possible under reasonably good conditions to dig from 75 to 150 rods of ditch per day.

A good operator can cut to grade much more accurately than can be done by hand. It is only necessary for him to know the grade of the proposed ditch. He then sets grade stakes ahead of the machine across which he constantly sights as he stands on the machine. By setting his stakes with a level there is absolutely no doubt about the resulting grade. The machine will cut accurately to a grade as small as $\frac{1}{2}$ inch in 100 feet.

Such a machine retails at \$2400. It is too expensive, therefore, to be purchased by individual farmers unless the size of the farm is large and considerable ditching is to be done. It is possible for two or three neighbors to go together in the purchase of a machine. Ditching with machines is, as a rule, done as custom work. The price for such digging averages about 1 cent per-rod-per-in.-of-depth to 30 inches. Above this, the price varies but it is about $1\frac{1}{2}$ cents per rod per inch; that is, a ditch 30 inches deep would cost 30 cents per rod; a ditch 36 inches deep would cost $30 + (1\frac{1}{2} \times 6)$ or 39 cents per rod. It would scarcely be possible to equal these prices by hand labor and, since the quality of work is greatly superior to the average hand work,

trenching by this method is much to be preferred.

The high price of all motor-propelled machines, as stated before, makes it almost impossible for individual farmers to own them. A number of horse-drawn machines have been placed upon the market in an effort to supply individual needs. A horse-drawn ditcher built somewhat on the plan of the traction ditcher has flanges of the large revolving wheel which penetrate the soil as the machine is drawn forward. The plow point running just to the rear of this wheel loosens the earth which is then pressed between the face of the wheel and the endless belt and is carried to the top of the machine and deposited at one side or the other. Only 2 to 6 inches of earth can be removed at one operation. It, therefore, becomes necessary to go over the ditch several times to reach the desired depth.

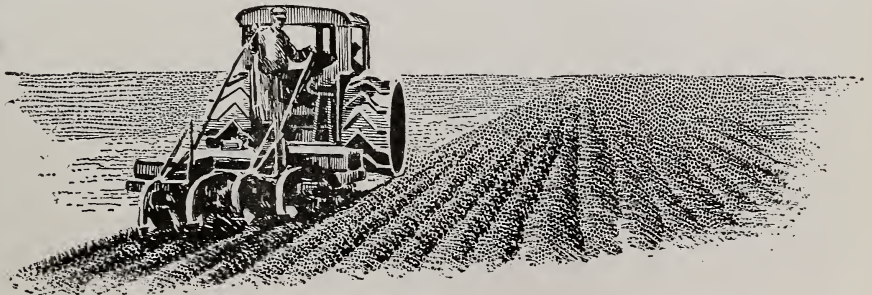
The depth removed at each "through" is determined by the condition of the soil and the power of the teams and is controlled by the wheel at the right of the rear seat. Six horses are required to draw the machine with ease. The work is best done when the soil is neither too wet nor too dry; if too dry, penetration is difficult, if too wet passing back and forth over the ditch tramps the soil too much.

This machine sells for about \$325. Under favorable conditions it will dig

50 to 75 rods of ditch per day, cutting to $3\frac{1}{2}$ feet, a larger size will cut to $4\frac{1}{2}$ feet. It is not possible to maintain as accurate a grade with it as with the traction ditcher, but if a level is frequently used as the digging proceeds, a fairly good grade can be secured. It is generally necessary to remove the crumbs by hand before laying the tile.

Another type of horse-drawn ditcher is an elevator about 10 feet in length on the end of which is mounted a heavy steel point. Both the point and elevator, of course, run in the ditch. The point loosens the earth and the elevator delivers it at one side of the ditch. The depth of cut is regulated by a rack-and-pinion in front of the operator. Different sized points are provided for different sized tiles. A heavy rear wheel operates the carrier on the elevator. The capacity of this machine is much the same as the former type. Experienced operators, however, have dug 150 rods a day when conditions were favorable. This ditcher sells for \$450.

The advantage of either of these machines lies in the fact that they are expensive and that they can be purchased by two or more farmers who can combine their teams and men and do ditching at odd times when other work is not pressing. The work goes along much more rapidly than by hand and the real hard work is eliminated.



BUILDING PERMANENT ROADS FOR HEAVY TRAVEL

Drainage, Foundation, Materials, Construction and Maintenance are Important

FRANK H. ENO, Department of Civil Engineering, Ohio State University

THE essentials for road building are: A good soil for foundation of road; thorough and complete drainage; a proper foundation base for the wearing surface; proper materials for the base and wearing surface; careful and intelligent workmanship in construction; constant and instant attention to wear during service.

Soils.

It is necessary in locating any road that good soil conditions be obtained. Marl, peat, bog and marsh conditions make good roads impossible except under the most expensive methods of construction. The loads hauled over a road are concentrated through the wheels upon four small areas, usually not exceeding 6 to 12 square inches in extent; with ordinary farm wagons and the usual loading, this may mean from 600 to 1000 pounds per wheel load; with motor trucks the loading may run from 1500 to 3500 pounds per wheel. It is quite evident from this that such loads rolling over even the best built concrete and brick roads will cause the road surface and foundation to yield, crack and finally break up complete if not rigidly supported by a firm soil beneath the foundation. With less rigid road structures such as gravel, macadam and bituminous bound macadams, the yielding road structure is more quickly destroyed when not properly supported. Clay soil when well drained makes a very satisfactory bed for road building. The best soil, however, is loam containing some clay and sand or gravel intermixed. A porous soil while it takes up rain water

readily is quickly drained and gives good support to the road structure.

The question may be asked, "What if the right-of-way along the section line or the property line leads over improper soils?" The answer is, "Relocate the right of way." The extra cost of the improvement over the marsh or quagmire, with its consequent upkeep and probable final destruction will in all likelihood cost more than a slightly longer way over better ground, even though the property owner charges exorbitantly for breaking up the continuity of his farm lot. If no such location is available, the more expensive of building deep and wide foundations may be necessary.

Drainage.

Probably the most important essential in the construction of a good road is drainage. One authority upon good roads when asked to name the essentials of good road construction, said: First, Drainage, Second, **more drainage**, Third, **MORE DRAINAGE.**"

While marl and peat soils do not have enough body to support a road properly, even when drained, most other soils can be rendered secure by thorough drainage. It is a fact well known to all users of country roads, that for certain limited periods during the year, loam and clay earth roads properly crowned and cared for, are nearly ideal for traffic. If these roads are properly drained and dragged, this desirable condition can be maintained for two or three times as long. What is essential to the continuance of good conditions in an earth road is doubly

necessary to the life and efficient service of a more permanently improved road.

Drainage is divided into three parts, **surface, side of ditch, and under drainage.**

For the plain earth road surface, drainage is secured by grading the road above the surrounding surface-level, and giving it a crown, sloping from $\frac{3}{4}$ to 1 inch per foot either way from the center. If this graded roadway is kept reasonably true in shape, and free from

edge of the ditch should have a slope of about $2\frac{1}{2}$ horizontal to 1 vertical, so that in case vehicles are driven over the edge into the ditch they will not be overturned. The ditches provide a means for removing the water from the road and the adjoining land; but that water which percolates into the soil may still reach the earth immediately under the road surface by passing under the ditches and be raised by capillary attraction to the surface of the road. To prevent this injury, drain



Sheridan Drive Near Chicago; Built 20 Years Ago; Resurfaced Twice

ruts and dished places, by means of a road drag, it will not cut up under traffic nearly so rapidly.

Ordinarily in grading up such a road, the extra earth required is taken from ditches along side the road. When properly planned these ditches should be parallel to the center line of the road and at a uniform distance away from the edges of the improved bed, providing a berm or protecting shoulder between the roadway proper and the edge of the ditch. The ditch should be deep enough and with sufficient grade to remove the water quickly. The inner

tiles should be laid on one or both sides of the road, preferably under the ditches. These tiles should be laid $3\frac{1}{2}$ to 4 feet deep, with a slight grade, to carry away water to the nearest natural outlet. These three forms of drainage having been properly provided, the soil under the roadway for 2 feet or more in depth and for a space considerably wider than the road bed will be rendered dry and stable.

Paved country highways as built today are usually 12 to 24 feet in width, (more often 16 feet wide). In some states in order to make the money

reach as far as possible, 8 feet paved roads are built on one side of the center of the roadway, always choosing the side carrying the loaded traffic toward market.

No matter which kind or width of road is built, however, the three principles of drainage described above apply. The only difference is that a water tight paved road takes the place of the crowned earth road. Therefore a community that can not afford to build a permanent surfaced road, may still with economy, proceed to grade, ditch and tile their highway, knowing that if it is properly done under the advice of a competent road engineer, the drainage features will be available for future more permanent improvements to the surface.

Foundation or Base.

The foundation or base upon which the surface of a paved road is to be built should fulfill four requirements:

1st. It should support the wearing surface unyieldingly.

2nd. It should unite or bond with the wearing surface sufficiently to cause the wearing surface and the base to act as a unit under the flexure and stress of passing loads.

3rd. It should be thick enough and strong enough to carry and distribute the load over a sufficient area of the supporting soil so that the latter will not yield under the load.

4th. It should be economically proportioned to the wearing surface and the traffic it is to bear.

When the base and the surface layers are well bonded so as to act together, the same increased strength is added to the paved road as is secured when two or more rods are bound together rather than when they act separately. With asphalt surfaced roads this bonding also prevents the surface from

creeping under traffic and forming rolls in the road. On some soils the foundation should be thicker than on other soils in order to distribute the load over a wider area, permitting the less stable soils to thus support the load by decreasing the unit load applied. It would seem, economically, quite unwise to build a concrete foundation to support a gravel or a water bound macadam surface. It would be equally unwise to put in a gravel or broken stone base for a thin wearing surface of concrete, sheet asphalt or for a brick or wood block pavement. The selection of the base should then be dependent upon the amount and weight of traffic to be borne and the amount of money to be expended upon the permanent character of the paved surface.

Proper Materials for Road Building.

The variety of materials available for road building is almost limitless. Each kind of material, however, must be handled in a manner peculiar to itself and under climatic and service conditions for which it is fitted. Anything near at hand that will improve the condition of the surface of a road to make it more travelable is road building material. Ashes, cinders, clay, brush, grass, coal slack, straw and shells will greatly improve a sand road. Sand and gravel will improve a clay road.

The roads of particular interest here are, gravel, macadam, bituminous macadam, bituminous concrete, cement concrete and brick roads.

Good road gravel should be composed of hard, tough pebbles ranging from $\frac{1}{8}$ inch to $2\frac{1}{2}$ inches in diameter, graded so that the smaller sizes thoroughly fill the spaces between the larger pieces, and the whole containing barely sufficient loamy material, or better yet, ferruginous clay, to

bind the whole mass together compactly. Larger cobblestones than $2\frac{1}{2}$ inches in size are not desirable in a gravel road and should be screened out or else raked forward and underneath the gravel layer.

The best stone for a water bound macadam is trap rock or a hard, cherty, dolomitic limestone. For best results the stone should be hard, tough, close grained, resistant to disintegration by freezing, and when crushed have good binding properties. These same quali-

ties apply to all the stone used in any form of macadam or concrete. crack in winter. They should contain no deleterious adulterants that are readily affected by water. They should be ductile and tenacious. It is unwise for any one to attempt to use bituminous mixtures unless guided in the use by an expert trained in the knowledge of the characteristics of the materials and the methods of handling them, and in the action required of them to secure a good road.

In oiling the surface of earth roads to lay the dust, or of macadam roads



Brick Road in Illinois One Year After Construction

ties apply to all the stone used in any form of macadam or concrete.

The bitumens used are tars, oils and asphalts. In a brief article it is impossible to give any complete idea of the differences and various characteristics of each. It will be sufficiently clear to say that bitumens should be free from oils and gases which volatilize at temperatures below that at which the mixtures are used in the roads. They should have such consistency that they will not run or be too soft in the heat of summer, nor become so brittle as to

to preserve them from injury by motor traffic, oils of asphaltic rather than paraffin base should be used.

No cement should be used in road building unless it has been tested according to the standard tests and fulfills the standard specifications for Portland cement laid down by the American Society of Civil Engineers. The same may be said regarding paving brick. Paving brick can not be made satisfactorily from the same material usually used for ordinary building brick, but should be made from

shale clays or impure fire clays. They must be evenly burned, have a uniform texture, uniform in shape and size and be properly annealed to make them tough and hard.

Workmanship in Construction

No matter how good the soil upon which the roads is built, nor how excellent are the materials used, if the workmanship in construction has been poor, the road will be a failure. Knowledge of how to combine the materials, what proportions of each to use, and what conditions must be met in each case, is an essential element.

Too much screenings or stone dust used in making a macadam road is worse than too little. Insufficient rolling with scant use of water will produce failure. An injudicious choice of binding materials will make from three to ten years' difference in the serviceable life of the road. What has been said with reference to a water bound macadam road applies equally well to any form of road by slightly changing the details. More money has been wasted through poor construction methods than through the use of poor materials, and probably much more money has been totally wasted than has been put to real service, taking the state as a whole.

Maintenance

One further deplorable waste of

money in road construction has been the total lack of the proper care of roads during the past. Gravel, macadam, and bituminous surfaced roads need constant attention. The moment a break in the surface of these roads occurs patching should begin. With gravel or macadam roads, raking over the broken surface, the addition of a little fresh gravel or stone with selected binder in it, the addition of water and then tamping or rolling will put the surface in condition again. If this is not done early, the surface continues to ravel out in some geometrical ratio above simple proportion. If motor traffic is becoming too heavy for these light surfaced roads, an application of heavy asphaltic oil or tarvia, followed by screenings or gravel and rolling may suffice to save the traveling surface.

Upon brick, concrete and bituminous surfaced roads the patching of cracks, chuck holes and ruts should take place frequently in order to prevent undue wear. Tough broken stone or gravel and asphaltic paving cement or tar may be used to advantage.

The old saying, "A stitch in time saves nine," might well be changed to read, "A stone in time saves nine" when maintenance of highways is in question.



Graduates of Ohio State's Three-Year Course

ARRANGING WOMAN'S WORKSHOP—THE KITCHEN

Planning the House for the Convenience of the Housekeeper

HAZEL M. BROWN, '18

THE kitchen is the center of the working area. It is the crux of the farm-house. Labor economy will be in direct proportion to the excellence of the kitchen arrangements, and this depends on a rational understanding of the functions of a kitchen.

Function.

From the modern viewpoint, a kitchen is a scrupulously clean room intended only for operations relating to foods. Kitchens are changing rapidly from general utility rooms, as used

and ironing work carried on in the kitchen but it was a place of washing hands, combing hair, shaving, removing boots and overalls, and it served as a passage-way from the back door to the front of the house. Such a situation is both wasteful and unclean. These related tasks are not connected with food and they are really unsanitary operations in a place where food is being prepared. By removing all work foreign to foods from the kitchen, we may have a similar and more convenient



Some Conveniences and Necessities for the Kitchen

by our grandmothers for all the industries of the home, to specialized workshops, smaller in size, more compactly arranged and equipped into modern conveniences. Washing and ironing are usually banished to a basement laundry, and sewing and dining are commonly moved toward the front of the house. The kitchens of many city apartments now provide only for cooking and dish-washing. The suburban or small-town house is likely to need some provision for young children. The farm kitchen frequently must retain dairy work. Not only some washing

room where work may be brisk and uninterrupted because one may reach things instead of stepping for them. Such a kitchen, together with a separate washroom, dining-room and pantry, will furnish a cleaner and more systematic combination than the old arrangement. The re-adjustment area will probably cover no more ground than the former one, but the woman will not be working over all the space all the time.

A kitchen should be adequately heated in winter, but reasonably cool in summer. Ventilation must not be neg-

lected. Floors and walls should be easy to clean. Colors should be cheerful and harmonious. Good artificial lighting for nights and cloudy days must not be forgotten. The climate and the direction of prevailing summer breezes are other determining factors in the designs of a woman's workshop.

Planning a Farm Kitchen.

The problems of the isolated country house are different from those of the city house. Usually cooking must be done for a large family and many hired hands. Distance from markets makes more storage room necessary for staple groceries. The kitchen should have running hot and cold soft water for cleansing purposes, and hard water for drinking and cooking. In winter the water should be heated by furnace, in summer by a gas heater in the cemented basement, where the hot water tank is located. The need of much hot water all the year round is great in the farm home and the women will be saved carrying in tons of water yearly. Several types of gas plants are giving good service in farm homes, among them, gasoline and acetylene. The gas plant will "kill several birds with one stone"; it will light the house, heat the water, cook the food and iron the clothes.

A farm kitchen should be rather large in order to accommodate working space for two women. Most women think it necessary to have a coal range, but the kitchen is overheated in the winter, since there is a furnace and cooks the

"cook" in the summer. The gas range she has ordered is as convenient as any city housewife's with its four open burners, simmerer, high oven and broiler. The floor space saved by the narrow stove is given to a two-compartment fireless cooker, raised to a convenient height by a cabinet, which the special utensils are stored when not in use.

The path through the room should be located at one side for convenience. One wall should be given over to storing staple supplies; a closet for cleaning equipment as brooms, a dumb-waiter used to carry the things up and down to the cellar; a clothes chute and the register. The same dumb-waiter brings up the heavy basket of wet clothes, washed in the basement laundry, ready to hang out in the sunshine.

The opposite wall on the south should be designed for cooking preparation. It should have a long work counter, with storage beneath and a high cupboard at one end. The refrigerator should be built into the wall and iced from the rear. Most farmers have their own ice houses and so the refrigerator is used all of the time. Close to the refrigerator and the work counter should be placed the stove. Swinging around on her heel the cook can place soiled dishes to soak in the sink.

A great convenience for the new coming industry and sweaty from the fields, should be the location of a lavatory, mirror, towels, and coat hooks off the rear entry.

PERMANENT CONSTRUCTION IN FARM BUILDINGS

Keeping the Wastes Down in Modern Farm Structures

PROF. FREDERICK W. IVES, Department of Agricultural Engineering

THERE was consumed by fire last year \$20,000,000.00 worth of farm structures; rats ate \$20,000,000.00 worth of grain; weather lessened the value of barnyard manures fully an equal amount. This enormous waste could have been prevented in part, if not wholly, by a little consideration of the repair and remodeling of existing farm structures. The item of human labor, our scarcest commodity in replacing the loss is almost immeasurable.

Fire originates either within or without a given structure, carelessness and lightning being largely responsible. Fires starting on the exterior of a building originate from burning embers falling on inflammable roofs or from close proximity to intense heat. Lightning may also be considered an exterior source of fire, although the fires resulting from it are usually kindled on the interior of the building.

Fires starting on the interior of a building may start from overturned lanterns or lights, matches, children playing with fire, defective flues, defective electrical wiring, spontaneous combustion, lightning, and overheated stoves. Practically all these are due to carelessness of some sort.

Old buildings may be protected in many ways and at comparatively small cost. Lightning rods have proven to be 98 percent efficient, by records in five Central West states. Their cost is small and they may be added to any building. When remodeling, new roofing of incombustible material may be used instead of wood shingles, at comparatively slight advance in cost. By these two items alone, buildings are made

practically fire-resistant from outside sources.

On the interior, fire stops may be built into partitions to eliminate rapid spread of fire. Flues should be carefully inspected and repaired or even replaced. Trash should not be allowed to accumulate in out-of-the-way corners. Receptacles should be provided for matches in all places where they are likely to be used. A receptacle for burned match sticks is more important still. Suitable hangers or brackets should be provided for lamps or lanterns. Provide fire extinguishers.

In the construction of new buildings, it is well to think of permanency in construction. A slightly greater first cost will insure a moderate up-keep as well as eliminate the fire hazard. At this time we cannot afford to waste human effort in building more or less temporary structures. With concrete and tile for foundations, walls, and floors; slate, tile, asbestos, metal and other protective roofings as coverings, a building may be built fireproof but for its contents.

Rats and mice have been eliminated from farms by the use of concrete foundations and floors. Concrete and tile or metal cribs and granaries are within the reach of those who desire vermin-proof storage for cereal crops. Wooden cribs and granaries may be rat-proofed with expanded metal or woven mesh cloth.

It has been shown at the Ohio Experiment Station that a concrete floor in a steer feeding shed resulted in a saving of manure of \$4.18 per head in a single season; enough to pay for the

floor. In a recent talk, Director Thorne of the Station called attention to the fact that barnyard manure today is the most available form of fertilizer and that over a period of years the Station shows manure to be worth \$5.35 per ton as a fertilizer. If we can change concrete to fertilizer by the simple expedient of paving our yards and sheds, what better bargain can we drive? One young Ohio farmer gained eleven loads of manure in three months by paving a hog-feeding floor at a cost of \$27.00. With the manure worth \$3.00 per load (current price in Columbus), his net gain was \$6.00 with the floor thrown in.

Only a few of the possibilities of building conservation have been shown. Rearrangement of building plans and building location will save much time and energy. For example, by moving a crib 200 feet nearer a feeding floor, one man is able to save fourteen working days per annum. By facing a herd of dairy cows in instead of out another man saved 250 miles of useless walking in feeding for 200 days. The farm home is no less important. Simple water supply and heating are two things of little expense, but of great labor saving value, to say nothing of comfort.



Permanency of Construction Is the First Consideration

MAKING AND USING RURAL COMMUNITY SURVEYS

Why the Score Card Can Be Applied to Sections as Well as Farms

PROF. L. O. LANTIS, Department of Rural Economics

IT is a well recognized fact that no two human beings are exactly alike and it is equally true that no two communities have exactly the same conditions or problems. Therefore, the plan that is used in one community will have to be modified to suit conditions in another.

Backward communities are found in every state, and are not confined to the mountainous regions in the eastern part of the United States. They are found in sections where the farm land is very productive and sometimes a non-progressive community is found in a county that is known, in a general way, as a progressive county.

Even in an up-to-date community there will be found conditions which need to be changed. There is an ever-growing complexity of human relationships and an ever-increasing interdependence of individuals on each other. Since these things are true, every person should be concerned about the social development of his community.

Those who are interested in improving conditions in their neighborhood must find means whereby the "abnormal and undesirable conditions may be restored to the normal and desirable state." It will not suffice for the people to undertake some plan for community betterment which some one has read about or heard about without considering the conditions where the plan is to be tried. Failure of plans sometimes retards improvement for several years because people are unwilling to try new schemes while the memory of a similar attempt is fresh in mind. Therefore it is necessary that

care should be exercised in laying out a plan for community development.

Survey "To Build" Community.

Professor von Tungen, of Iowa State College, says a social survey may be defined as a method of "taking an inventory of a community's activities and conditions, or a community stock-taking." The rural survey may be compared to the periodical inventory taken by the modern merchant. The successful merchant wants to know how the various branches of his business are progressing, for he realizes that success in one branch may be offset by failure in another and his business as a whole may be ruined. Likewise the successful community is interested in the proper development in the social, economic, educational, religious and other enterprises; for it, too, realizes that a failure of part of its institutional enterprises may offset progress in other lines.

A rural survey has been compared to the examination which a physician makes when he is trying to ascertain the cause of a patient's illness. This comparison is not a good one in every respect because the physician's diagnosis ordinarily implies that the condition of the patient is abnormal. This may not be true of a community that is surveyed because the purpose of a survey is not to "show up" but to "build up" the community.

The need of a community survey may be shown by statements made by two men who are interested in the betterment of community life. Professor Edwin L. Earp, of Drew Theological Seminary, says: "We must get the

facts before the people in an intelligent way, and I mean by that, the facts as they may apply at the crossroads, or on the village streets, or in the town or city, as well as those greater things that have to do with the nation and with world-wide humanity. We must insist upon intelligent social diagnosis before applying social remedies." Professor L. H. Bailey, formerly of Cornell University, says, "We must found all our progress in rural life on a close study of the facts and the real elements in the situation, in order that we may know exactly what we are talking about."

A survey of a large region may be made like the census of the United States or it may be confined to a small area, like a school district, a church parish, or a community. It may also be general and the information collected may be along all lines or it may be special and have to do with only one thing, as for example, an educational survey.

A survey will be much more successful if the people who live in the territory that is being surveyed are in sympathy with the idea. Therefore, it is always advisable to explain the purpose and plan in detail to those who will be questioned. A person who has some definite knowledge about surveys should be the supervisor of the work.

Methods Used in Surveys.

There are four general methods of investigation in conducting surveys—personal investigation, estimates from correspondents, schedules to be filled by informants, and schedules in charge of canvassers. The first and last methods are the most satisfactory. These can be used with splendid results where the survey is limited in extent and a trained supervisor is in charge of the work. It is essential to have persons act as canvassers who are very tactful.

Whatever method is used, the schedules should be very carefully prepared. Schedules that have been used in other localities should be studied, but each community will require a different outline. Whenever practicable, use questions that can be answered "yes" or "no" and when results are tabulated care is needed to distinguish the "no's" from cases where no answer was obtained. The value of the survey depends largely upon the accuracy of the data collected and this fact should be impressed upon all those who are helping with the work. The Extension Service of the College of Agriculture is in a position to render assistance in the development of schedules for surveys, in the direction of the field inquiry, and in the tabulation and interpretation of results.

The material that is collected must be properly tabulated before it can be used. Then the next step is to interpret the facts that are brought out. One of the best way to present the results of a survey is to make charts or maps showing the facts which have been discovered. For example, a map may be prepared which will show the roads in the community, the location of the village, the churches, the school buildings, and other public buildings. By using ink of different colors or little seals made out of colored paper other interesting things may be shown on this map, as, for example, which farms are occupied by tenants and which by owners.

Sometimes a survey is conducted in order to prove a certain theory and in the effort to show that the theory is correct, some of the facts are ignored and the conclusions are not justified by facts. Investigators have sometimes proceeded on the theory that the value of a survey depends on finding something

wrong, a misconception of what a survey should be.

Using the Survey.

When the survey is completed and the maps and charts are made, the next step is to get the facts before the people in the community that has been surveyed and suggest plans for improvement along the lines deemed advisable. It is not wise to attempt to change too many things at the same time. The

done more easily where the people are anxious to improve conditions. Before the survey was undertaken the people of the community should have had the whole plan explained to them and should have understood that this work was for their benefit. Get them interested and they will want to know the results of the survey.

In the efforts to get the residents in the community to understand the pro-



Making Farm Life Pleasant and Attractive

leader must begin with things as they are and work towards the ideal which he has in mind and which he will try to have other people appreciate. The leader must always remember that changes in the existing order of things come slowly and, therefore, patience is necessary to be successful.

A practical problem which arises at this point in the attempt to develop a community is how to get the people to support the changes which the survey shows should be made. This can be

posed plans, some meetings should be held. Speakers who are qualified to discuss these plans may be secured in the county, or from departments of the state government, or from the Extension Service of the College of Agriculture, at small cost to the community. Suppose the intended improvement is along the line of better schools. The survey will show the actual conditions and the County Superintendent of Schools or some one from the office of the State Superintendent of Public In-

struction may be secured as a speaker to discuss the subject. Sometimes a debate between two men in the community will bring out the main points on each side of the question.

Using Community Organization.

A question frequently arises concerning the organization that should do this work of educating the people. Why not use the various organizations which are found in the community? A farmers' club usually has a program when it has a regular meeting and a discussion of conditions as revealed by the survey and ways of improving conditions would prove interesting. A grange in the community would find the proposed improvement a profitable subject for discussion at a regular meeting. Meetings may be called at the school house or town hall for discussing the proposed plan. If the survey has been made to ascertain the religious conditions, then the meetings would probably be held at the churches.

If a general survey of a community has been made, there may be several things that demand attention. It is best to take up one thing at a time and then bring about the desired changes by a series of drives, each aimed to improve conditions along a particular line.

When people try a plan of community betterment based on facts brought out by the survey and it is satisfactory, they are ready to try other plans. If the first survey has dealt with educational matters, the same procedure may be followed with reference to matters of recreation, church, labor, culture, health,

elements of population, and so on, until the whole is covered.

If the people in a community are convinced that some changes in the existing order of things are necessary they will usually find a way to make the changes. It may be that money will be required and sometimes this retards a desirable change. At Antrim in Guernsey County, Ohio, it was decided that a larger school building was needed. No regular survey had been made because the community is a small one and conditions were generally known. There was scarcely enough money to maintain the school and how to build the addition to the school house was a problem. Mr. Stamm, the Presbyterian minister there, took a prominent part in getting the people to promise to give money, labor, or material. In a few months the addition was completed and the people are well satisfied with what they have accomplished. Something similar to this may be done in almost any community, if the people are convinced that there is a real need for improvement.

When an improvement of any kind is proposed there are always those who oppose it because they think it is not needed. The facts ascertained by the survey will show the actual conditions and "facts are stubborn things" in an argument. The minister, the teacher, and any one who expects to be a community leader will find the survey most helpful and in each case plans may be worked out whereby the people will become familiar with the results of the survey and also with the schemes proposed for improvement.

MILKING MACHINES A WAR TIME NECESSITY

How the Labor Item in the Dairy Can Be Reduced Materially

RUSSELL L. GEORGE, Manager, Hill Top Farm, Wheeling, West Virginia

A WAR time necessity on many dairy farms. Labor and feed problems confront the American dairyman today as never before. Our manufacturing establishments have been making large war time profits and have installed bigger and better machinery to supplant human labor. This has not been the case in the dairy industry. Since the war began feed has increased about 100 to 150 per cent in cost. Oats that were selling at 43 cents per bushel now sell in load lots at \$1.04. Bran that sold for \$21.50 per ton now sells at \$40. Corn that sold for \$30 per ton now sells for \$72. Labor that formerly cost \$40 to \$50 per month now costs \$80 to \$100.

On the other hand milk that sold for 10 cents per quart now sells for 14, an increase of 40 per cent. In other words the operating expenses have increased so much more than the income has expanded that the smaller dairyman has been forced to hold his dispersal sale. Others who have taken a more far-sighted look into the future realize that our country must be supplied with dairy products and that in order to get these products the selling price must eventually rise in proportion to the cost of production. They have kept their herds, believing that the future will bring better times for the dairy industry. This class of men are wondering what they will do this coming summer when labor is sure to be the limiting factor and many are looking to the milking machine as a partial solution of their problem.

Advantages of the Milking Machine.

My experience with milking machines has brought me to the conclu-

sion that the principal advantage of the mechanical milker is in the labor problem. In our plant on Hill Top Farm it requires three men to do the work in the barn, including the milking when the machines are used. When we milk by hand it takes five men, making it necessary to take two men from farm work at milking time. This is not very agreeable with the men. In fact it is hard to get men to do milking along with farm work.

Machinery appeals to the average man. I do not believe that it is as easy to milk with the machines as by hand. However, it is much easier to employ men and you get a better class of men when the machines are used, and I find that they take more pride in their work.

Milking machines fit well into emergency cases. Every dairy experiences a "quitting," sickness or vacation time of labor. There is a physical limit to the amount of hand milking that the remaining men can do. The only limit to machine milking is that of time.

Efficiency.

There have been many failures with milking machines. Their efficiency depends largely upon the power and the operator. If a gasoline engine is used to furnish power it should be the most dependable one that can be bought and even then the average operator will find that he has to milk by hand occasionally. Where electricity is available the electric motor solves the power problem. It starts quickly, runs noiselessly and does not need the continual care that other sources of power require.

The operator need not be a skilled

mechanic. We have a 16-year-old boy operating the machines in our dairy and he is more efficient than older men who have had charge of them. Anyone who has a liking to machinery, who is careful and attentive will have little trouble with them. He should give his full attention to the machines and should not leave the barn or attend to other details while the machines are in operation.

As far as production is concerned we have records of each cow for several years with hand milking and a little over 1 year with machine milking. Records thus far show that the cows give slightly more milk when milked with the machine. Recent data obtained by the leading experiment stations show the same increase in production with machine milking.

The idea is prevalent that clean milk cannot be produced with the mechanical milker. We have been producing certified milk during the past year for the city of Wheeling, W. Va., with the hearty support of the Medical Milking Commission for the milking machines. Our average weekly bacterial count as made by the city health department for the last 6 months has been 7640 per cubic centimeter. These tests represent the average milk of the entire herd as it reaches the consumer one day after it is produced. Where special care has been taken we have had counts as low as 2000.

Care of the Milk Machine.

It is very easy, however, to get counts that run into the millions. I know of dairies where the practice is made of rinsing the teat cups in cold water as soon as the milking is finished when they are hung up in the barn and left until the next milking time. There is no wonder that the milking machine has been said to be unsanitary and that

its use has been prohibited by many city health authorities. The parts of the milker that the milk touched must be carefully cleaned and sterilized after each milking. They should first be rinsed with cold water. Then they should be washed well with warm water containing a little washing powder. The rubber tubing should be cleaned with brushes that are made for that purpose. Then all should be rinsed again with cold water. The next process is sterilization. Pieces with no rubber parts can be put into the steam sterilizer if it is available. The rubber parts, and the metal parts if the steam sterilizer is not used, can be put into an odorless disinfecting solution. There are many of these solutions on the market today and most of them will do the work well. We use a chlorine solution and find it very efficient as far as disinfecting properties are concerned although it corrodes the metal parts if they remain in the solution for too long a time.

Expense.

The cost of milking with the machines is inversely in proportion to the size of the dairy plant. The larger the herd, the cheaper is the cost of milking per cow. The overhead expense of upkeep, the time required to get the machines together and started and to wash them up is practically the same regardless of whether six cows or a hundred cows have been milked. Results have been obtained by the United States Department of Farm Management showing that in the medium sized and large dairy milking can be done cheaper with the machines than by hand. In our own plant we have found practically no difference in the milking expense. Although the cost of employing human labor for hand milking is increasing, there is a corresponding in-

crease in the cost of power, repair parts and repairman's time for machine milking and then interest on the investment and depreciation charges must be included.

The United States Food Administrator has realized the position of the dairymen and has said that they have one of the most important burdens of the war to bear. We should exert every effort to do our part. We know

that milking machines are no longer an experiment; that they are efficient; that they will increase the amount of dairy products that can be produced per unit of human labor which as I have said will be the limiting factor in production. No man should give up at this critical time because of the labor problem when almost the whole world is looking to the American dairymen and the American farmers for food.



Milking Time at Hilltop Farm, Wheeling, W. Va.

AFTER THE WAR—WHAT WILL THE GRANGE DO?

Reconstruction Problems That Rural Sections Must Deal With

L. J. TABER, Master, Ohio State Grange, Barnesville, Ohio

THE immortal Garfield once told us that the mariner, in measuring heights and depths and determining his location, and the probable course to follow, would not make soundings, or measure his pathway during a storm, but would wait for the calm and the sun and the stars. In discussing the future of the Grange, or any other organization, we must not get our bearings or measure probable progress from a point such as the present, when the world and civilization is suffering from the greatest storm in its history.

In judging the future of our organization, we must consider its past and its record of service and achievement. We must more than consider its past. We must scrutinize its present and judge of its life, its vitality, and its ability to serve in the present crisis.

The past of the Grange is a half century of moving forward. Its present indicates life and strength and growth. Some will say this being true, why discuss or think of the future. We must remember that this of all times is not the time for the drifter. Neither the Grange or any other human agency will continue to go forward and upward of its own weight and past motion. Whenever we begin to drift, we begin to die.

It is useless to try to determine just what influence the present titantic conflict will have on the future of American agricultural life. Of this we can be certain; that new and unsolved tasks ahead will demand new treatment and new methods of attack. Many of these problems will be thrust upon the farmer for solution, and thrust upon him with

compelling force. We must be properly equipped with the knowledge of these problems—what they mean to us—and then be prepared and so drilled that we can marshal our forces in their solution.

Farm Life Important.

That individual is indeed blind who has not noticed the tremendous progress that the world has made toward social democracy during the past three years. Progress in this direction during this period has been greater than in the century preceding. At the close of the war we are certain to be engulfed in the overwhelming wave of radicalism. If there be those among us who doubt this, we ask them to study critically recent legislation at home and abroad. A great task ahead of the Grange is to exert a steadying influence during the coming years—not simple opposing all change or progress, but to assist in leading us nationally toward better ideals and in harmony with changed conditions resulting from the sacrifice and the suffering of the present years. A distinguished United States senator said to the writer recently: "I tremble when I think of the future of our country, but thank God that the farmers of a nation have never started a revolution or destroyed a government." We all rejoice that this is true, but in the readjustment our order must be brave, valiant and efficient, and be so strong numerically and so efficiently prepared that no violence will be done the calling of agriculture.

The important task before the Grange, in one direction at least, is to

appreciate the tremendous importance of keeping the Grange strong and enthusiastic during the present strenuous times. It is easy to feel that we can afford to neglect the work of the order for the time while we are at war. This determination is fatal to everybody. If there ever has been a time in the history of organized agriculture that it should be numerically strong, mentally equipped and sufficiently trained to stand like adamant for the welfare of all, that time is here and now. Recent treatment of the farmer as compared with organized labor should bring this home to us with compelling force. If there was one reason why our fathers should join the Grange, there is a score of reasons why their sons and daughters should be enthusiastic workers in the same cause.

This conflict is bringing home to us the realization that one of the problems in the path ahead is that we should emphasize the solidarity of agriculture. We must have a stronger feeling of brotherhood between all tillers of the soil. Until we get this no real, permanent, constructive progress can be made.

Duty of Grange.

The duty of our organization throughout our country in the present crisis need not be discussed here, as the Grange has measured up fully to its duty along patriotic lines. We should not forget, however, that a Grange may buy Liberty Bonds; may subscribe liberally to the Red Cross; may be untiring in its efforts to increase production; may give willingly of its members to carry the ensign of the republic to foreign fields, and yet that Grange may not have fully measured up to its responsibility. We must ever remember that patriotism

means a willingness to sacrifice and serve. If we do not love American institutions sufficiently to make some real sacrifices for their maintenance, it may be said that we do not love them at all. The Grange must be interested in all the lines of activity mentioned above, and more. It must be interested in the moral welfare of the soldier in camp and upon the field. It must be willing to see and lend its influence along the line of a higher patriotism, which demands that we serve our country, right or wrong, but that we will so serve, that our country would be always right.

One problem in the years just ahead of us, that will come to us as it came to our fathers, will be that the Grange must use its influence to bring a nation back from the arts of war to the paths of peace; a duty to assist in binding not only the wounds of the nation but the wounds of a bleeding and suffering world. Will it not be necessary for the organized farmers of America to lend definite and positive assistance to our brother farmers across the water when this baptism of tears and suffering has been removed?

Would it not be wise to consider, when peace does finally come, the setting out of some definite work in the reconstruction abroad, so that we may demonstrate a brotherhood of the soil larger than the confines of a republic?

When we pause to consider the things that we must do in the coming years, if our order lives and serves, we will find we can group these tasks under two main heads:

Moral and education.

Social and economic.

Under the first head, one of the first duties concerning us will be to develop a still higher type of citizenship. It is not enough for us to boast that the

dwellers of the open country are the moral backbone of our nation; we must assist in moulding rural America into still more valiant champions of all that is best in civic life. We have heard much in recent months of making the world safe for democracy. One of the first tasks before us in this connection will be making America safe for our boys and girls. The Grange in an organized and systematized manner must continue lending every influence toward completing a task begun for the elimination of the saloon. This problem will devolve upon the farmers of our country and in the coming six years we must determine to add another achievement to the long line to the credit of our order.

As we study the problems of citizenship, will we not go a step further and insist that that fundamental Grange gospel of the equality of men and women be engraven in the organic law of the nation.

It must not be forgotten that after all the highest and first object of the Grange is the development of a better manhood and womanhood, and bringing that manhood and womanhood into closer communion with the great Author of our being; or, in other words, the Grange must be more interested in the problem of the country church which has been a contributing factor to the rural progress of many sections of the country.

Coordinate with an increased interest in the country church should go increased interest in the country school. Because we have championed the best things educational in the past offers no excuse for our failure to continue to keep the schools of the country in the lead, or at least abreast with the schools of city or town. One problem of the country school in the future will

be to assist in directing the outlook of our boys and girls toward the farm instead of away from it, as the educational tendency of the past decade has been.

It is fundamental to the welfare of the farmer that some agency be sufficiently powerful to exert a corrective influence on the educational programs that the department of agriculture, through its many ramifications, our agricultural colleges and their associated influences are exerting upon rural education. This question comes frequently to us: Shall agricultural colleges, rural high schools, agricultural extension schools, etc., deal with agricultural education in accordance with their advanced thought, or shall they deal with these problems in the light of the desires of the farmers themselves?

Under the second head opens an endless field to the organized farmers in the years to come. In the past we have talked much of cooperation, have cooperated to a very small degree in buying and to a slight degree in selling. We may find as one result of recent legislation that the farmer will be compelled more and more to cooperate in the selling of the produce of the farmer in order to compete with new agencies that are coming into our social existence. The regulation and control of prices by the federal government brings a problem that is vital to the very life of the farmer. If the federal government can determine a just price in time of war, what is to prevent it from determining that price in time of peace? This thought comes to us with the startling realization that the majority of our citizenship lives not in the country but in the city. The majority today are consumers. This majority will constantly increase.

How then can we protect the minority except by organization sufficiently strong to speak effectively for that minority.

We that produce the necessities of life may be compelled to utilize new methods in seeing that the same amount of brain and brawn expended in the country in the production of food will yield equal returns with the same amount of brain and brawn exerted in the average line of our nation's industries. This is the one vital problem just ahead of us, if we are to keep our percentage of our boys and girls in the country.

One open door ahead is for the Grange to act, as it were, as the big brother of every cooperative rural movement; every movement that has for its purpose the bringing about of a fairer distribution of the fruits of the labor of the farmer. As was mentioned before, the principle of collective selling, or collective bargaining, as it is sometimes termed, must be utilized and increased wherever possible. Milk selling associations, fruit and potato selling associations, cooperative grain elevators, cooperative storage houses and other similar agencies should have the assistance and encouragement of the Grange.

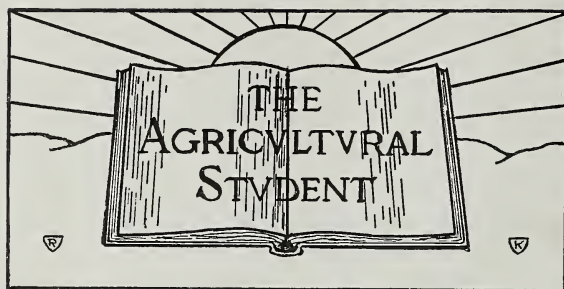
Will it not be better for the Grange and for rural life that these agencies be organized independent of the Grange, including the entire community in which the Grange finds its field of action, rather than being limited to Grange membership? But, you will say, this will weaken the Grange. Not so. We must not forget that Scriptural passage, "He who would lose his life shall find it." It is only as we are willing to spend and be spent, to give

of ourselves and of our organization to the welfare of rural life that the Grange can hope for permanent place in the years to come.

The Grange finds itself today at the forks of the road. One path leads off along the line of least resistance. It seems easy and attractive at first. Thought and effort are not needed; the Grange just drifts down the road like an automobile coasting down hill. It is the path of the Grange that is interested only in the pleasures and pastimes of the immediate present. It is the dancing Grange, the card-playing Grange, the banqueting Grange, the Grange of ease and comfort—and nothing more. By using the field glass, we are persuaded that the end of this road leads to oblivion.

The other fork of the road starts up the hill. Guide posts point the way toward sacrifice and service. The pathway is full of obstacles, difficulties to be surmounted, obstructions in the way, but by using the telescope of faith and hope, we can see beyond that the pathway leads over the mountains of progress into the fields of maximum service and usefulness.

Looking back over the past, noting how worthily and well the founders of this fraternity did their part, we of the present must be willing to re-dedicate ourselves to the cause of rural organization. We must be willing to spend and be spent, to sacrifice and serve commensurate with the sacrifice and service of our fathers. If we do this we would choose the road up the hill, and the future historian would record that the Grange became a mighty controlling force for the development of rural life and national welfare.



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COLUMBUS, OHIO, APRIL, 1918.

EDITORIAL

BOYS' AND GIRLS' CLUBS.

In recent years much emphasis has been placed upon the organization of boy's and girl's clubs throughout the country. This is perhaps due to the fact that there is a general shortage of food materials in almost every warring nation. Preparedness is the crying need of the hour and it has been demonstrated that the necessity for this is even greater and more important in peaceful pursuits in time of war than in times of peace. The men and women of the future are the boys and girls of today, and the future of American agriculture is largely dependent upon them. The greatest responsibility they will have to assume, will be the perpetuity of successful agriculture, for this is the basis of all wealth and the true source of happiness.

From the standpoint of the economical relation of farm management, boy's and girl's club work will encourage diversified farming, soil building by rotation of crops, the keeping of hogs and other livestock. The boy or girl who joins a calf club, when the animals have been carefully selected, belongs to an army of fighters against poor cows, unfavorable conditions, and unprofitable dairying.

Many valuable lessons may be taught through this kind of work which can not be taught so impressively nor so effectively in any other way. The purposes which every organizer of boy's and girl's clubs should have in mind may be summarized as follows:—

1. To teach boys and girls the general principles of thrift, application, and perseverance.

2. To assist boys and girls to take part in any movement for bettering conditions in whatever line they may be interested, such as better pigs, better calves, more and better corn, etc.

3. In the case of pig and dairy calf clubs, the idea should be to bring such agencies as breed associations, dairy associations, banks, and other commercial organizations and the public school system into close touch in their effort to help the boys and girls in the work of community interest.

4. In the case of corn clubs the object should be to encourage more intensive farming by using the best known methods of soil building, the selection of seed, seed-testing, the cultivation of corn, etc.

The club becomes the connecting link between parent and teacher, farm and school, and last but not least, it forms a cooperative atmosphere in which rural young folks may be developed to the highest ideals of rural life.

The club organization should not only embody the idea of producing with the greatest economy and securing the largest returns, but it should embody educational features as well. With this idea in mind, meetings should be held regularly, at least once a month, in some convenient place for the purpose of discussing the progress of the work. These meetings may be supplemented and increased interest may be aroused by bringing in an outside speaker occasionally to address the boys and girls on some subject of interest.

The contest idea may be used to good advantage in this connection. A contest usually creates a lot of interest and stimulates the youngsters to better and more efficient work. To carry out this idea, the products, whatever they may be, should be brought together to

one place to be exhibited, and judged and prizes awarded. This prize should be made attractive so it will be worth going after.

SHORT COURSE FOR GIRLS.

Shall the farm girls of Ohio have a three-year course at Ohio State similar to the short course that is now being offered to the younger farmers of the state? This question has been mentioned freely during the past few months especially since a plea has been entered by the three-year men. The three-year men want to stand back of the farm girls for they realize that women are interested in farming and possibly even more efficient than some of the "men farmers;" the short course men also know that farming can not be carried on successfully by single men. Possibly the sentimental favor will outweigh the educational realizations of the three-year men.

A short course for farm girls must be given consideration, however. Just what it should offer is important. The present four-year course in home economics is the ideal now. To repeat parts of it for farm girls will bring in duplication of teaching, etc. A short course would not train girls for high school teaching nor other educational duties so far as the present educational system of the state is arranged. But a farm course for farm girls would be possible and practical.

Such a course would necessarily have more agriculture in it than home economics; that is, poultry, dairying, vegetable gardening, horticulture, etc., would interest the farm girl to a greater extent than any other class of young women. The fundamentals of home economics too would fit into such a course. Under such a proposed plan the enrollment would be limited to

farm girls; at least it would have a greater attraction for the farm girls.

The three-year men have the punch in their work; they will always be found in the front line trenches in farm work. If a similar course for farm girls would be only one-half as successful as the present three-year agricultural course it would be worth while.

THE PUBLIC SALE.

The public sale is a good place to sell and a good place to buy. It furnishes an opportunity to the seller of offering his animals when they are in the best salable condition and when the buyers are most likely to want them. When a breeder decides to sell some animals in a sale, he will pick out those that he wants to sell, and those that will be in the best of condition at the time of the sale. The spring of the year seems in general a good time for a sale.

The sale furnishes the buyer a variety to choose from. There are most always animals of different sex, age, size, and line of breeding. For example one man might want a heifer, another a mature fresh cow. This also gives the buyer an opportunity to compare the different animals and study their breeding, taking into consideration the other man's judgment, which means a great deal, especially to the beginner.

There is one bad effect in regard to sales which must be overcome. The average man has a feeling that something will be slipped over on him if he doesn't watch very carefully. The breeders, especially those making annual sales should gain the confidence of the public in general. This is even true in private sales. The buyer must be satisfied and a sale is not a real sale until he is satisfied. The seller

should not feel profited unless the buyer feels in a like manner. Put in animals that will please the majority of buyers.

Last of all do not misrepresent an animal. If there has been just one animal misrepresented it will reflect upon not only the seller in his future sales, but also upon the reputation of the community in general.

SEED POTATOES ON THE FARM.

Seed for the potato patch as well as for the corn field must be given considerable thought this spring. The extreme cold winter has rendered a surprisingly large percent of our corn unfit for germination, likewise it has caused thousands of bushels of potatoes to freeze in storage—especially in the farmers' cellars. The freezing of potatoes has caused quite a loss to many farmers during the past winter. However, the large number of potatoes that were badly chilled, even tho still fit for food, may cause a greater loss this spring. Farmers will use these potatoes for seed, ignorant of the fact that they will not sprout. Potatoes that are severely chilled or partly frozen are unfit for seed because the vital part of the "eyes" is destroyed—especially is this true with potatoes that were just sprouting. It may be that not all the eyes on a potato will be destroyed but a decreased yield will result from using such potatoes for seed nevertheless.

To prevent this loss the matter of seed potatoes must be given careful thought this spring. No potatoes should be used for seed from a bin where frozen potatoes are found. The surest way, is to place the potatoes intended for seed in a warm, moist place. If they do not show indication of sprouting within a week they should be discarded.

Home Economics Department

CARE OF LINENS

IT is hard for the average housewife to obtain good information on linens from the department stores. On account of the war, the usual supply of linen has almost ceased, so that it is important to buy your supply for the next few years now.

The high price of linen both for table use and for toweling brings up in the housewife's mind the all important question of substitution. Does the lower price of cotton offset the value of the higher priced linen? Cotton fibers can be twisted and made strong but the characteristic short fibers which are full of oil will protrude from the cloth and catch dust, so that after constant use the material becomes grey and requires constant boiling to keep it sanitary. It is much more difficult remove stains from cotton than from linen. Another disadvantage to cotton is that after it has been once laundered, the short fibers come off in specks and cling to the china or glassware. If cotton table linen is used it leaves the undesirable lint on your lap. Linen is undoubtedly a more desirable and sanitary material for constant household use and is worth the added price on account of its valuable properties.

For the table linen it pays to buy good quality. When linen is stiff and creases easily it probably contains a good deal of sizing. Rubbing between fingers to see whether it contains sizing is another approved method. A sized piece of linen will lose its stiffness and its glossy surface when treated in this manner. To test for linen, drop a small amount of glycerine on the material. If it is pure linen it will

become transparent, but if it contains cotton it will not give the test.

The table linen should be laundered without starch, ironed with as few folds as possible, then rolled on a covered stick or cardboard roll kept for the purpose. Two tablespoons of Javelle water in the wash boiler will remove ordinary stains and keep the linens white and looking new. The disadvantage to heavy linen table cloths and napkins is that it takes so long to iron them properly, so that for daily use cotton or Japanese crepe lunch cloths or runners are found to be labor and time savers. They are inexpensive and may be obtained in some very attractive designs.

A silence cloth or pad is necessary under the table cloth to prevent marring the table top and to deaden the clatter made by the dishes. These may be cotton, or asbestos.

The feel of good linen is smooth, cool, leathery, yet soft. The light from it is clear but not too brilliant. It has weight as lifted in the hand and is judged by its weight. Some women prefer unbleached linens and bleach them themselves. There is economy in this, for the chemical bleaching used almost exclusively for the medium grades weakens the fiber.

The simple table cloth patterns are more attractive than the large gaudy ones; polka dotted patterns are always good. A close all-over pattern launders better than bands and plain twill alternating. BERTHA HOLTKAMP.

USING MAPLE PRODUCTS

Maple products may be substituted for sugar in many different ways. For example in corn muffins or griddle

cakes in place of where it calls for a tablespoon or one-fourth of a cup of sugar use maple syrup. In custard or cream pie the maple gives a delicious flavor and will save the sugar. Icing for a cake may be made as follows:

One cup maple syrup boiled to the hard ball stage and pour slowly into the beaten white of 1 egg. Beat until the correct consistency to put on the cake.

Velvet Cream

1 cup maple syrup
White of 2 eggs
1 pt. heavy cream
Flavoring

Prepare eggs and syrup as a boiled icing for cake. When cool add flavoring and beaten cream, pack in a frozen mixture three or four hours and serve.

NORMA BRADLEY, '19.

FRUIT DIET

FRUIT is especially valuable in the spring diet due to its tonic effect on the system. It contains a considerable amount of water, salts in solution and bulk in the form of cellulose. Fresh fruits and green vegetables play an important part in furnishing the body with iron and other mineral elements and these are especially valuable in the spring when the condition of the blood is generally below par.

Considerable bulk is very essential in causing the large intestine to empty itself easily, thus keeping the body in a well regulated condition. This is especially important in the spring and as fruits contain a large portion of bulk they should be given a prominent place in the diet.

Often among growing children, iron is lacking in the diet. This causes anaemic conditions and makes the body readily attacked by disease. The ordinary diet does not supply enough min-

eral constituent and this may be obtained by the addition of fresh fruits and green vegetables.

It is often difficult for the housewife to plan her meals so that they will be palatable and appetizing to her family. Fruits are an attractive and palatable addition to the diet. They may be had the year round and contain constituents which are necessary for growing children and to the general health of the adult. The importance of fruit in the diet cannot be overestimated and the housewife should be advised to encourage their use in larger quantities.

MARY RALSTON WERNER.

BUILT-IN FURNITURE

IF built-in furniture is to be used in the home it should be of the best workmanship available and of the best quality of whatever wood is used. No other furniture that can be bought for the same amount of money will have the same strength, value and simplicity. It is desirable that this built-in furniture should look like what it really is and should appear as a part of the room. Therefore it should be finished like the rest of the wood work. It is also important that the wood be well seasoned or the furniture will soon shrink and become ugly.

Perhaps the most common use of built-in furniture is for cupboards, chests, seats and drawers. The present high cost of building makes it desirable to conserve floor space and this is best done by the use of this kind of furniture. A house should be well supplied with cupboards and closets. A linen cupboard is much more convenient than drawers and a closet 30 inches deep and 4 feet long makes a very good sized closet for keeping sheets, spreads and other linens.

Built in seats look well and if they

are of the proper measurements and shape are comfortable, especially if they are upholstered or padded. Fire places seem to afford an excellent chance for settees and these add to the attractiveness and homey appearance of the room.

Bookcases and sideboards seem to be popular and useful. The sideboard should be placed in the center of a wall, being as unpretentious as possible. An unused doorway may be made into book shelves by placing inexpensive strips of wood, horizontally, within the door form and arranging the shelves upon them. Long curtains, harmonizing with the general color scheme, may be used to cover them.

No one thing contributes more to the finished appearance of a room than does built-in furniture and yet overdone spoils the ultimate effect.

BERTHA DUNN, '18.

FOR HOME ECONOMIC SECTION.

The reasons that the American race eat so much meat is because they like the flavor, satisfies a craving, easily prepared, abundant supply heretofore, always had a tradition that strong people eat much meat and the high food value. These are all true but at present we should cut down as the supply is not adequate for the demand. We don't need so much and could afford to cut down one half and still be adequately fed. It is far better to have too little meat than too much.

Meat can be prepared in several ways and still give us the necessary

nutriments and satisfy us if a little extra care is exerted in its preparation. The following show good examples of what is meant.

Escalloped Meat.

Into a baking dish put alternate layers of macaroni or rice and chopped or ground meat. Pour tomato sauce or gravy over each layer. Cover with buttered crumbs and bake until dish is heated through and crumbs brown.

Ham Souffle.

1 cup white sauce	2 eggs
1 cup ham	

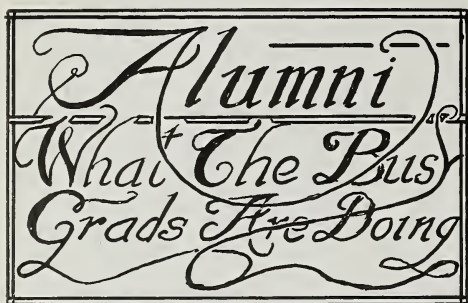
Make white sauce, when cool add egg yolks beaten lightly and the minced ham. Beat whites stiff and fold in. Pour into buttered baking dish and bake 40 minutes in a moderate oven.

Vegetables, cereals, white sauce may all be added to your meat left overs and with good seasoning give an appetizing dish.

Shirred Eggs.

To serve three, make a cup of cream sauce, using two tablespoons each of butter and flour, one-fourth a teaspoonful each of salt and pepper, and one cup of rich milk or thin cream; stir in about one-fourth a cup of grated cheese. Put about two tablespoons of the cream sauce into each cup then break a fresh egg and pour the rest of sauce over. Set the cups into the oven to cook the eggs thoroughly. Generally five minutes is sufficient. This offers variety in the preparation of eggs and is delicious.

NORMA BRADLEY, '19.



Harry W. Palmer, '16, former assistant in the Department of Agricultural Chemistry, was married on March 10 to Miss Orpha N. McCartney, '17, at Middlebourne, W. Va., where both have been teaching in the high school. Mrs. Palmer will continue her work while Mr. Palmer has resigned his work and has enlisted in the Medical Corps of the Regular Army. He will go into training at Fort Oglethorp, Ga.

Milo B. Jimison, '17, formerly instructor in the dairy department at Ohio State University, is now County Agent of Erie County.

Herbert B. Marshall, '17, was married on February 22 to Miss Hazel Augsberger of Bluffton. Mr. Marshall is engaged in special hog production work. He has charge of three counties with headquarters at Lima.

Ray Donelly, '15, who instructed the winter course students in dairying during the 1918 session, is farming at Ravenna, Ohio.

S. B. Ewing, '17, is teaching vocational agriculture in the high school at Worthington, Minnesota.

Claire M. Lewis, '17, is manager of the Warrior Mountain Orchard at Oldtown, Maryland.

Reed L. Kennedy, ex. '19, was married on February 20 to Miss Clara Lathrop of Berkey, Ohio. Mr. Kennedy is farming at Berkey.

Brook D. Drain, '17, is teaching horticulture at Ohio State University.

Chas. L. Thrash, '17, is assistant in the department of agricultural chemistry and soils at Ohio State University.

Mark E. Simons, ex. '18, is sergeant in the band at Camp Sherman.

John Rarey, '17, is engaged in dairying near Kenton, Ohio.

Carl Lowe, '17, is first lieutenant in the infantry at Camp Sheridan.

Graydon S. Adams, '18, is in the naval service, being stationed at present at the Great Lakes Naval Training School.

Harvey R. Behm, ex. '19, is farming near Bloomville, Ohio.

Elmore O. Williams, '12, is farming at Mt. Victory.

The following graduates of the College of Agriculture are now engaged in the teaching of vocational agriculture in the high schools of Ohio: F. W. Smith, '16, Hebron; A. C. Kennedy, '15, Medina; R. B. Simon, '12, Wadsworth; Lee J. Smith, '17, Fayette; Thomas E. Berry, '18, Hillsboro; Jay M. Whitney, '16, Berlin Heights; Harry Atwood, '15, Paulding; Eugene W. Budd, '17, Valley City; E. B. Hawes, '13, Marion; O. P. Gossard, '15, New Bremen; G. K. Livaslian, '14, Prairie Depot; H. W. Zuercher, '16, Wooster; A. B. Williams, '14, Painesville; H. W. Nisonger, '14, Versailles; W. T. Ryan, '16, Bellefontaine; R. B. Kinkead, Gibsonburg; J. R. Allgyer, '17, Plattsburg; Wm. Montgomery, '18, Worthington. The training department for prospective teachers of vocational agriculture is located at Worthington.

S. L. Anderson, '15, has resigned his position as State Creamery Inspector of Indiana and will take up county agent work in Ohio this spring.

Harry M. Edgerton, ex. '19, is now a second lieutenant in the machine gun battalion stationed at Camp Meade, Maryland.

PAINTING FARM MACHINERY

Would it pay to paint your farm machinery if by so doing you saved $5\frac{1}{2}$ percent of the value of the machinery every year? In many cases capital is not available for the building of a tool shed but there are few farmers but who could not save several dollars for the purchasing of sufficient paint to go over the machinery at least every 3 or 4 years.

Of the various machines on the farm those constructed of wood should be painted most frequently. The manure spreader, the wooden frame harrow and the farm wagon are some that need a good and frequent coat of paint as they are more susceptible to weathering than iron constructed machinery. These machines may be painted with a moderately priced red barn paint. They should be scrubbed, rinsed and thoroughly dried before the paint is applied. If the wood has become very open a primer should be applied first. A good method of priming is to apply heated linseed oil to the dry wood which besides making a water proof base for the coat to follow, swells the wood so that the tires do not need cutting soon afterwards. The oil can be heated in a lard can over the shop stove. It might seem like an unpleasant task to clean up a manure spreader to paint it but if any machine needs it it is the manure spreader, which is subject to the detrimental action of the acid in the manure.

It is also essential to paint iron constructed machinery to prevent rusting. Some parts such as fertilizers cans on corn planters and binder twine cans are galvanized. But in time galvanized iron will go thru; it protects at its own expense, the zinc gradually disappearing as the exposure to the weather continues. The smooth spankled surface

of galvanized iron and steel parts will unfortunately tend to prevent the adherence of even the best paints and peeling may ultimately result. This condition however, is obviated by first treating the smooth surfaces before painting with a solution of copper salts which may be prepared by dissolving four ounces of the chloride, acetate, or sulphate of copper in 1 gallon of water. By brushing on this solution the smooth surfaces are roughened, a thin deposit of copper being plated out over the surface. After an hour or so the surface may be dusted off and then painted with a prepared metal paint. Red leads and red or black oxides make good metal paints.

STRETCHING FENCES.

A wire fence should be properly and sufficiently stretched. A poorly stretched fence falls short of serving its intended purpose, sags down and must soon be replaced, besides being an "eye sore" to all who look upon it.

One of the first essentials to a good fence is good posts properly set. The posts should last as long as the fence. Either concrete or steel posts answer this requirement admirably but at the present time are too expensive. Locust, cedar, mulberry, catalpa, and hedge are all good. For the farmer who likes to grow his own posts, locust are perhaps the best tho they do not grow quite so fast as some of the others mentioned. The posts should be set not less than 3 feet in the ground and well tamped in. Particular care should be taken to get them in line for if they are not they will not remain solid and the fence will not stay stretched. The end and gate posts should be larger and set deeper than the line posts and well braced. A satisfactory method of bracing is to set the nearest line post not

more than 8 feet from the end post and use a diagonal brace from the top of of the end post to the bottom of the other mortising it in. Around the bottom of the end post over the brace and the top part of the other post about 3 strands of number 9 wire are run and back again to the bottom of the end post. The loose wire is then twisted with the aid of a short stick. The line posts should not be more than a rod apart.

With the posts properly set and braced, the next consideration is actual stretching of the wire. There are several good makes of stretchers on the market any one of which will give satisfaction. For smooth or barbed wire, the block and tackle type is perhaps as satisfactory and simple as any. Do not be afraid of getting the wire too tight. The stretchers will usually break before the wire will. One of the best "frost" fences I ever saw was stretched until nearly all of the kink was out of the wire. Once stretched, the fence should be well stapled. If woven wire is used it is well to staple every wire.

JOHN K. GRAHAM, '18.

FRUIT EXPORTS AND IMPORTS.

1916 was a banner year for fruit exportation from the United States of the last three years. Fruit to the value of \$36,073,051 was exported in 1916, while the exportations for 1914 were only \$31,030,713 and for 1915, \$34,229,906. A large percent of the fruits exported was either fresh or dried. The rest which is about 16 percent was exported as preserved fruits. Of the fruits exported raisins held the lead with prunes second. Apricots and apples were exported in large amounts, the value of the apricots showing somewhat of an excess.

Fruit imports were much less for

1916 than for the two preceding years. In 1913 the value of the imports was \$33,638,334; for 1914, \$27,081,399; and for 1916, only \$23,285,816. Nearly 96 percent of the fruit imported was fresh and dried fruit. Of this bananas were far in the lead, constituting nearly 50 percent of the total fruit imports.

R. L. SUNDERLAND.

TREATING OATS FOR SMUT.

As a simple matter of insurance all oats used for seed should be treated for smut. The sacks and bins that are to contain the treated oats should also be treated. There are two common methods of treatment, the wet method and the dry, both of which have their points of merit. The wet method, as the name indicates, leaves the treated seed in a moist condition, making it necessary to wait until the seed dries before sowing and often then they must be sown when a little moist which causes trouble and again the oats are sometimes injured in germinating qualities necessitating that it be sown thicker. It has the advantage of being a more thorough treatment and that one man can do it without aid. The dry method requires less time and labor and requires no waiting for the oats to dry before sowing. Before treating by either method the oats should be cleaned with a fanning mill to remove smut balls and poor seed. Oats treated by either method may, after thoroughly drying, be fed to stock without danger.

For the wet treatment prepare a solution of formaldehyde by mixing 1 pint of 40 percent formaldehyde solution with 40 gallons of water. The seed should be spread on a clean floor 4 to 6 inches deep. Apply the solution with a sprinkling can using 1 gallon to $1\frac{1}{3}$ bushels. The above amount of solution is enough to treat 50 to 60

bushels. Stir the oats well so that it is evenly wetted. Shovel the oats in a pile and cover with sacks or canvas from 2 to 5 hours to keep the gas formed from escaping.

The solution for the dry treatment is made by diluting 1 pint of 40 percent formaldehyde solution with 1 pint of water. A sprayer like is used about the stables to keep flies away is alright. Shovel the oats from one pile into another meanwhile spraying each shovelful as it is moved. Pile the oats and cover with sacks or canvas and leave for at least 5 hours after which they may be immediately sacked and drilled. Due to the irritant effect of the formaldehyde vapor upon the eyes, nose and throat, the sprayer should be held close to the oats and there should be a good circulation of air around where the oats is being treated.

R. L. SUNDERLAND.

REPAIRING FARM FENCES.

We find that there is no time or money invested on the farm that will pay a bigger dividend than that required to keep the fences repaired; so each spring we aim to devote about one week to this work. We find that the best time to do this work is in the spring soon after the frost is out of the ground. For at this time the ground is loose and the posts are easily set back in their original position. Also we find that other farm work is not so pressing at this time, and a little repair work is apt to save much time and money later on. Nothing is so disgusting as when during harvest time the cattle break into a corn field and you must leave your work in the hay field and repair fences. This is apt to cause loss of money in your corn crop, hay crop, and in your cattle; all of

which might have been prevented by a little repair work in the spring.

There is no fence but what will require a little fixing from time to time. On our farm we have woven wire, barb wire, and a few rail and picket fences, all of which must be repaired annually. The rail fences are nearly depleted, but as they were the old standby of the pioneers and of such great service to them, somehow we hate to destroy them; so we cling to them as long as possible. By using the best rails of one to repair another we can still have a serviceable fence.

The picket also will soon be a fence of the past, as the scarcity of timber will prohibit its use. To repair these fences, we replace the broken pickets with sound ones from a fence that was recently torn down. An old picket fence can be strengthened by stretching several strands of barb wire over the pickets as far from one another as desired. This will add several years more to the usefulness of the fence.

We have more barb wire fences on our farm than any other kind but find them not satisfactory and will be glad when they can be replaced. Although this fence is rather cheap and easy to build, looks well when new, and turns cattle well, it is rather expensive in the end. Its usefulness soon is gone if not properly cared for, and it becomes dangerous to stock, and there is nothing that will detract so much from the farm as a lot of old barb wire fences with broken, sagging, unstapled wires fastened to posts that lean in all directions. In repairing these fences we hitch into a light wagon and take the following equipment: staples, nails, hatchet, claw-hammer, wire-pincers, a roll or two of barb wire, some smooth wire, crow-bar, sledge, ax, and quite a number of posts; then

begin at one end of the farm and fix all the fences. We drive all the posts enough to get them back into line and to tighten the wires; re-staple the loose wires, and make all other repairs that are needed. For repairing barb wire fences we find that a pair of tongs about two feet long with six-inch jaws give the best service, as you can get a firm grip on the wire and pull it very tight. It is also very convenient to use in pulling the ends of loose wires together.

We find that the woven wire fence is the most satisfactory fence that we have, and are quite sure that it proves to be the cheapest fence in the end if we use a heavy grade of wire.

H. E. WALTON.

FARM MACHINERY

"Machinery is the knife and fork by which the nation eats," says C. O. Reed, professor of Agricultural Engineering at the University of Illinois. "This brings forth the practical question, what can we do for farm machinery,—our ally."

"The farmers of the United States are buying machinery to the extent of \$200,000,000 annually. The price must not be considered but the comparative efficiency of the machines. Sometimes the high-priced machines are more efficient while the opposite may be true."

Mr. Reed gives several reasons why the modern farm machinery is necessary today. Some of them are: increased effectiveness, allows displacement of men and material for other lines, more persons in production, increases size of farm, shorter working day, lessens cost of production, and increases production.

Mr. Reed says that the farmers must take better care of their machinery. The farmers should thoroly study the

direction sheets sent out by the manufacturers with their machines. "It isn't necessary to house all the implements. Some machines will not be injured by the weather but such implements as the grain binder and plow bottom should be under cover."

"The manufacturer should lower the cost to the farmer. There are two ways he can do this: by standardizing and by doing away with credit. There are more styles and sizes of machines on the market than needed. If credit was done away with the price would necessarily be lower as it would simplify the manufactures' business to a considerable extent."

In conclusion Mr. Reed mentioned three things the farmer can do for the coming season to help win the war: first, order his new machines at once; second, overhaul and order repairs, and third, use his influence to get immediate transportation.

L. A. SUTERMEISTER.

PUBLICITY ON THE FARM.

That the large majority of farmers give too little attention or overlook entirely the benefits to be derived by giving their farms the right kind of publicity is a common fact. A farm that is frequently commented about favorably either because of its methods of doing business, its appearance or for any other reason, no doubt increases its business and builds up a reputation that is difficult to undermine. There are many ways of spreading the name of one's farm and its products so that the mention of one or the other associates the reader with reliability, honesty and quality. In other words it is desirous of creating a market for your products at all times.

By having neatly painted buildings and often a sign painted or placed on

the roof of the barn carrying the name of the farm, the germ of publicity is started in the community. By the above I do not mean a name painted in large sprawly letters covering the entire roof of the barn but one that can be comfortably read from the road. A small attractive sign at the entrance of the farm also adds to appearances. The use of letter heads is generally to be recommended; they may contain the name of the farm in bold, distinctive type across the center of the page at the top, with the owners' names in the upper left and right hand corners and if one owns breeding stock, the list of winners at some of the recent shows can be noted. There are many different ways of setting up letterheads which prove quite popular. Sometimes the picture of some animal is put on the letterhead but as a rule unless the work

is done exceptionally well, it does not add to appearances. The use of a type-writer aids greatly in turning out a neat business-like letter. Advertising in reliable farm journals affords the greatest opportunity for wide publicity where one has an oversupply and is seeking a market. One should have a name for his farm or a trade mark and use it consistently in his advertisements, as often a name or trademark associates the reader with the owner or the products or animals he turns out.

Most farmers have experiences that would be of interest to men in the same line of business and by sending them into farm papers ideas can be changed. Besides being paid for telling these experiences the writer receives a certain amount of publicity that can not but be of help to his business and to himself.

C. H. SPRAGUE.

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Buy from our local dealer or write
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APRIL NEWS FOR SCHOOL AND FARM

TO STUDY RURAL PROBLEMS.

A class in Rural Leadership was organized on Wednesday evening, March 6, with L. O. Lantis of the Rural Economics Bureau in charge. The purpose of the class is to study rural conditions and community problems which confront students going into country communities as leaders. The class is not limited, however, to agricultural students. Any student in the university who is interested in rural work is welcomed.

Mr. Lantis succeeds Prof. Paul L. Vogt as instructor in rural sociology. Previous to taking up Professor Vogt's work he was connected with the extension department and has been traveling and lecturing thruout the state. He has studied rural conditions, first hand and so is especially capable to teach the class in Rural Leadership. The class will hold weekly meetings for a period of 8 weeks.

Three or four times each week fresh pimento cheese, manufactured by students in the department of dairying is on sale in the sales room in the basement of Townshend Hall. Although nearly every other variety of cheese, including brick, cheddar, swiss, limburger, cottage and neufchatel, is manufactured, pimento is by far the most popular.

"We sell practically three times as much pimento as any other variety," says one of the students in charge of the work.

This cheese is made by the coagulation of milk by rennet, the curd being allowed to drain until it attains a dry consistency. The pimentos are then ground, and one and one-half pounds

of salt added to the pimentos for each 10 pounds of curd. The salt and pimentos are then mixed thoroughly in a grinder before being added to the curd. After a thorough mixing it is packed in half pint jelly glasses and is ready for market.

Some of the cheese is sold to the north end groceries but most of it is retailed out direct from the sales department.

TIMBER FOR FUEL.

Homer L. Johnson, fuel administrator for the State of Ohio, on February 18, 1918, appointed Chief Forester Secrest of Ohio, Judge C. O. Hunter, and Norman W. Scherer, professor of Forestry at Ohio State University, to act as directors of the fuel wood division of the United States fuel administration. This was done to interest the farmers in the necessity for using the poorer grades of wood in their woodlots for fuel. Action must be taken in the near future if Ohio coal supply is to meet the demands placed upon it.

To better coal conditions farmers in many parts of the state are to be refused coal. They are however to be instructed without cost to them, the most profitable way to cut their woodlots. Of the three and a half million acres of forests in this state it is estimated by the Forester that three and a half cords per acre are available and should be used for fire wood consumption. This will make a total of 1,000,000 to 1,200,000 cords of wood or 2,000,000 tons of coal saved in this state.

Anyone having wood suitable for firewood consumption may dispose of it very readily by listing it with the committee in charge.

DANN O. TABER, '19.



YES *it costs more to build NOW than it did one, two or five years ago. The cost of lumber, however, has not increased more than twenty-eight per cent since 1914, while other building materials have advanced as much as seventy-five per cent.*

IN terms of farm products, present lower. *Over One-Half Billion prices received for hogs, wheat, corn, Board Feet Annually of* **ARKANSAS SOFT PINE** are produced by this organization. That means an abundant supply of moderate priced, reliable building material available to home-builders during this season.

BUILD NOW—WITH WOOD is the ideal wood for complete homes. The framing material is light, strong and durable. The interior finish supplies a woodwork which will delight the most fastidious housewife.

WE *will send on request booklet containing attractive home designs, brochure on proper finishing of woodwork and finished samples. Write today*

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SWINE AT THE OHIO STATE UNIVERSITY

Seventy-one head of purebred swine are kept on the Ohio State University farm for swine study in the College of Agriculture. These include four breeds consisting of different classes which vary in age from a few months to several years. The herd consists of the breeds: Duroc-Jersey, Berkshire, Yorkshire and Poland China.

The Duroc-Jersey breeding herd is comprised of the young boar, Ohio's Cherry Chief; four sows over 2 years old, four gilts between the age of 1 and 2 years, nine gilts ranging from 6 to 12 months, and four gilts under 6 months of age.

The Berkshire breeding herd consists of the boar, Matchless The 10th; four sows over 2 years old, two gilts under 2 and over 1 year of age, and five gilts ranging between 6 and 12 months.

Caldmore Bass II, which took second prize at the International Livestock Exposition at the Chicago Stock Yards this year, heads the Yorkshires. The remainder of the breeding stock consists of one young boar, three sows over 2 years old, three gilts ranging in age from 1 to 2 years, one gilt 1 year old, and five gilts ranging from 6 to 12 months.

Of the Poland China breeding stock, there is but one sow over 2 years old, one gilt between 6 and 12 months, and three gilts under 6 months. There is no Poland China boar among the swine this year.

The University produces swine primarily to be used by the students for study; and as it is not necessary to have a large number of hogs, and also because of lack of housing facilities, only one litter of pigs is raised from a sow each year. Most of these are raised in the spring and kept during the sum-

mer; thus the herd is enlarged and is often increased to as many as two hundred. In the autumn the herd is again decreased by selecting and retaining the best stock and selling the remainder. Of what is sold, the best goes to stock-raisers, while the rest is fattened on the University farm and sold for pork.

HAROLD E. WALTON.

"ABRASIONS"

Abrasions are very common yet unnecessary according to Joel S. Coffey of the Department of Animal Husbandry of the Ohio State University. As in many other cases, so here the old saying is true that an ounce of prevention is worth a pound of cure.

The harness should be cleaned and oiled so that all points of contact are smooth and flexible and the harness should be made to fit at all points. The animal should be exceedingly well groomed at all points of contact with the harness, and should be gradually brought into working shape.

The following solutions will act as remedies: Use a wash, 1 pint of alcohol into which are well shaken the whites of two eggs; a solution of silver nitrate 10 grains to an ounce of water; a solution of sugar of lead or sulphate of zinc, 20 grains to an ounce of water; carbolic acid, 1 part in 15 parts of glycerine. However any simple astringent wash or powder will effect a cure provided the sores are not irritated by friction.

When "set-fasts" are developed, the dead hornlike slough must be dissected out and the wound treated carefully with antiseptics. It is better to permit the animal to rest and if this cannot be done, the wound or abraded part should be protected by cutting a cavity in the pad to cover the wound and thus protect it.

E. L. SHUCK.

AT OHIO STATE

Just as thousands of poultrymen—large and small—have found Conkey's Buttermilk Starting Food to be the chick food they've been looking for, so has it also made good at Ohio State.



PROFESSOR JACOBY says: "Conkey's Buttermilk Starting Food has been used with success in the Poultry Department. The lactic acid in the buttermilk is very effective in preventing White Diarrhoea."

This year we can't permit the chick losses usually caused by bowel trouble. This year we must **RAISE EVERY CHICK**. You can do it. Feed



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If your dealer doesn't sell Conkey's write us direct. Sample package sent on request

THE G. E. CONKEY CO.

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OATS AS A NURSE CROP FOR ALFALFA.

Alfalfa sown in the spring gives good results, if oats is sown with it as a nurse crop; this keeps the weeds out of the alfalfa, gives it a good start, and at the same time, furnishes a light crop of oat hay or grain. The ground on which the alfalfa is to be seeded should be broken in the fall, so the freezing and thawing action of winter has a chance to work on it and so it has a chance to settle to form a firm seed bed for the next spring. Sometimes, if the soil is of a stiff clayey nature, it would be advisable to plow in the spring, because such ground has a tendency to run together during the heavy rains of spring.

As soon as the weather permits in the spring, the soil should be stirred and preparations for the seed bed begun. It should be in a finely pulverized condition, with a firm solid substance and with the top surface being in a smooth, level condition. If weather conditions are not adverse, the oats should be sown about the first of April with an ordinary grain drill, at the rate of about 3 or 4 pecks per acre. The drill should be set so the grain is planted to a depth of about one inch. If planted deeper than this, the hoe shoes make the ground unlevel and the thorough distribution of the alfalfa seed impossible. After the oats is seeded and before a crust forms on the ground due to rain, the alfalfa should be seeded at the rate of about 30 pounds per acre. In doing this an ordinary hand seeder may be used with good results, or if a more thorough distribution of the seed is desired, the two-wheeled seeder may be used. After the alfalfa is seeded, a light harrowing may be given the seed bed with very marked results, altho

this all depends on the weather and no set rules could be definitely given.

Two methods prevail of disposing of the oat crop later on, one is to cut the oats in its dough stage for oat hay and the other is to cut the mature crop for grain. In either case, there should be about 6 inches of stubble left on the ground for protection to the young alfalfa crop. If the oats is thick and heavy, so that it shades the young alfalfa a great deal, it is advisable to cut the crop for oat hay, if not it is advisable to let the oats mature to be cut for grain. In case the oats are cut as a mature crop, the oat shocks should not be left to stand on the young alfalfa, because it can be easily smothered out and killed.

E. J. GRENER.

TRACTOR TESTS.

In order to secure some experimental evidence regarding the cost of operation of different makes and types of tractors, several tests will be run on the University farm this spring. The tests will be conducted by students in advanced agricultural engineering. The tests are rather extensive as over 60 acres will be plowed. The Emerson, Heider, and possibly a Lauson or Huber tractor will be used. Figures on the cost of operation, including fuel, oil, repairs, time, trouble, etc., will be obtained. These tests will merely supplement experimental work along the same line last spring.

Another test will be run to show the effect of different lubricating oils. Engines will be run under full load for 10 hours with good oil. The temperature of the oil, and radiator water, the fuel consumed and the wear on the bearings will be noted. The same test will be repeated with poor oil. This

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Dance Correctly.

test is designed to show the farmer or tractor owner the importance of careful selection of lubricating oil.

GROWING AND SELECTING SEED POTATOES.

The chief method available for increasing the yield of potatoes is the use of better seed. The average farmer who takes great care in selecting and caring for his seed corn will plant most any kind of a potato and think nothing of it. If the market is good, he will sometimes even sell all of his best potatoes and plant the little ones remaining. These methods are far from commendable, and perhaps the best evidence obtainable, is the fact that while the average yield in the United States for the 5-year period between 1908 and 1912 was 96.1 bushels, the European farmer was at the same time getting nearly 200 bushels per acre. The

chief differences in the methods practiced on the two continents are those of the production and use of seed. In an experiment conducted at the Arlington Experiment Farm in which strong tuber units were contrasted with weak ones, the former gave a yield of prime merchantable potatoes sixteen times as great as the latter.

Since the best market seed obtainable will have from 5 percent to 10 percent variance from the variety, it will pay most any farmer to spend a little time and trouble in the production of his own seed. The method recommended by the United States Department of Agriculture is the tuber-unit method. This consists in the selection of a number of perfect tubers weighing from 6 to 8 ounces from the seed bin. Plant these on one side of the patch, quartering them longitudinally as planted. Drop the pieces singly in

Burpee's Seeds Grow

The Department of Agriculture estimates the value of back-yard gardens of 1917 at more than 350,000,000 of dollars. At least, 100,000,000 dollars have been added to the nation's wealth by the increased planting of 1917.

It is even more necessary to take care of the future. Demonstration gardens in many big cities planted with Burpee's Seeds have done their share to instruct the amateur gardeners. Burpee's Seeds have a forty-year reputation for the Best that Science can produce.

Burpee's Annual for 1918

has been greatly enlarged and improved in order that it may be of the greatest help to every gardener. It has 216 pages, 24 of which are in color illustrating more than 100 varieties of choice vegetables and flowers. Always a safe guide to Success in the garden. Mailed free upon request. A post card will bring it. Write for it today and mention Agricultural Student.

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Start in with a class now and get the benefit of class work so as to learn the art of dancing before the spring dances. All finished dancers come from the classes.

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TUITION—Class Lessons, 10 for \$5; Private Lessons, 6 for \$5.

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the row, leaving a little space between the pieces coming from the different potatoes. In this manner it is a simple process to detect the variant individuals and eliminate them. Take only perfect potatoes from the uniform, high-yielding, and true-to-variety plants. Store these well and in a place not too warm. If the storage place is too warm the potatoes will sprout and thus waste some of their vitality which should all be saved for the seed-bed. Next year select a few of the best of these and plant them in a similar manner. By this method you will have developed in a few years, a variety of potatoes which cannot be equalled on the market either in quality or yield.

JOHN K. GRAHAM, '19.

A combination of a central farrowing house and individual houses for the sow and her pigs is being used with good results on the Meridel Stock Farm at Black Lick, Ohio.

The sows are removed from the pasture to the farrowing pens about two weeks before the pigs are expected so that they may become adapted to the new surroundings. The north half of the house is used only for feeding other hogs and the sows kept in the south half so that they may have the advantage of the sunlight. The sow and litter are retained here until the pigs are two weeks old, or more, so that they are able to move about freely.

At this time they are removed to the individual houses which stand 9 feet apart in a single row along the lane. These wooden-floored houses are 6 by 10 feet, having a shed roof. A door near the roof on the east side of each house admits sunlight and the lower floor on the south side opens into the wooden-floored pen between the houses. This pen allows the sow and pigs to

Cheap Land!

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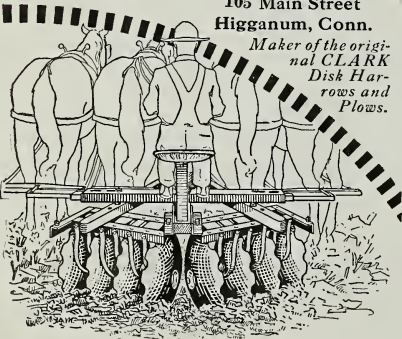
Does away with hand labor, cuts bogs and stump land that a moldboard cannot touch. Also for heavy stubble and any disking. Two and four-horse. Heavy disks forged sharp. Thousands in use.

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get some exercise before they are turned out on the pasture as well as to provide a "sun bath." As soon as the pasture is ready, the panels between the houses are removed and the entire lot are in one field ready for the important period in the development of breeding hogs.

Few farmers can practice as complete classification of hogs for feeding as is used on the Meridel Stock Farm at Black Lick, Ohio, but many can apply this to some degree and profit by the advantages.

The herd, which is entirely pure bred and only for breeding purposes, is divided into several classes according to age and sex. The aged sows are kept in a pasture where they must walk about 600 feet from the sleeping quarters to the feeding place. The young boars and gilts are also kept in pastures but their sleeping quarters are not located so as to compel exercise as this is not thot necessary. The aged boars, boar pigs and sow pigs each make another division.

This classification is practiced because of the different requirements of each division in the amount of protein and carbohydrates. When feed is such an important item in the cost of production it is essential that it be used in the most profitable and economical way. This can be done by applying the principles of feeding that have resulted from scientific study and experiment.

V. G. APPLGATE.

Maggie 23rd, the champion female of the recent Shorthorn Show and Sale held at the State Fair Ground, is now the property of the University. She is a red heifer of nice form and should prove a valuable addition to the Shorthorn herd of the University.

Bigger Profits in Grain

If stored in a Dickelman Metal Grain Bin or Corn Crib. Wheat, Rye, Oats and Corn are cash crops and always have a definite dollar value. You wouldn't leave the contents of your pocketbook exposed to loss or damage; why let that which is just as good as money?



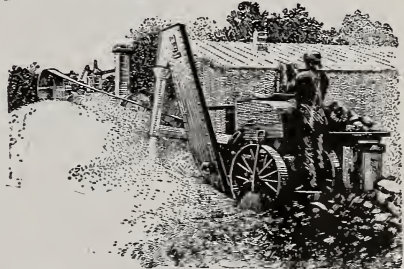
DICKELMAN'S Ventilated Metal Grain Bins

and Corn Crib are absolutely rat and mould proof. Grain stored in one of these bins is safe until prices suit you to move it. Soon pays for itself in added profits. Built of heavy corrugated galvanized iron, scientifically ventilated. No damage from loss or "sweating"—easily filled and emptied. A size for every farm—big or little. Write for catalog and prices.

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Least known but at the same time most extensive in its work is the extension department. Twenty-five courses are offered in this "Fireside College." Everything from bookkeeping to hog raising and from gardening to the management of the farm proper are offered as courses of study.

The correspondence course is designed to meet the needs of that large class of people who are interested in farming but cannot attend college. An effort is made to give the student in brief, concise form such information as he may deem most beneficial to himself or he may be most interested in. Each subject is treated technically, but in clear, plain, simple and direct manner that is easy to understand.

The courses are free to all residents of Ohio. All that is necessary for the

prospective students is to send in his name. He is then enrolled in the course and the first set of questions forwarded to him. As soon as he has finished the first set of questions and returned them he receives another set. The only stipulation the Agricultural College requires is that the student take up the course with earnestness and pursue it diligently. It is advised only to take one course at a time. No college credits are given for the work.

CARE OF MARE AND COLT

Great care should be exercised in handling the mare and colt for the first few days after foaling according to Joel S. Coffey of the Department of Animal Husbandry of the Ohio State University. However, the colt claims a great deal the more attention of the two.

The foetal membrane should be

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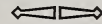
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quickly removed from the colt's nose as in many cases the colt is suffocated before nature comes to its rescue. Immediately the mare should be given a pure oatmeal gruel and then leave her alone in entire quietness. If the colt comes along normally it should be up sucking in one hour and by all means should get the colostrum from the mare in order to clear the meconium out of its digestive tract.

Two diseases which play havoc with the young colt for the first few days after its birth are the naval disease and impaction of the bowels, the former of which is by far the more important. Naval disease has especially come into prominence in the last few years.

Immediately after birth the naval cord should be washed with a 1 in 1000 solution of mercuric chloride. This disinfection should take place twice daily, and the danger of naval infection will be reduced to the minimum. Wash the entire belly of the colt with a 2% solution of coal tar dip, doing likewise with the udder and genitals of the mare. This will prevent naval ills in colts as the germs enter the umbilical cord of the colt.

When colts are affected with this naval trouble, pus forms and enters the circulation, enlargements being formed at the poll, throat and joints. Colts thus acted upon usually die. If

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PETER SMALL

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Early Maturity of Corn Gives Quality

which insures a substantial crop and at times a mine of returns. On our farm in Pike County, Ill., our man prepared his seed bed and used our pulverizer in the most approved way, having plowed deep for preparation. He planted it about the first of May, 1917. He cultivated it exclusively with the Tower Cultivator, while 90 per cent of the neighbors used their old style shovels. The frost came the first of September; as a consequence there is very little corn in that section of Illinois that matured so that it will grow. Our corn was husked and put into the crib in November, the 27 acres planted about the first of May yielding 52 bushels per acre. We have sold this corn to a leading seed-corn man of Illinois who had his experts test the germination. We realized from the sale over \$200 an acre for the corn for the entire field of 27 acres. This shows the enormous returns from surface culture of the sort which uses the Tower System. The above is the experience of one of the firm, J. D. Tower & Sons Company.

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The Tower system never destroys a corn root when used according to our directions and increases yield and improves quality by two weeks earlier maturity, compared with old style systems. It is the proper culture for beans, cotton, potatoes, Kafir corn, and other crops. "Our Reasonable Reasons Why Everyone Should Use the Tower System" will be sent if you furnish us your address. Our cultivator bears the word "TOWER" on the tongue. It is manufactured only at Mendota, Ill.

The J. D. Tower & Sons Co.

(Original manufacturers of surface cultivators)

MENDOTA ILLINOIS.

they do live, they always remain stunted and are called "weeds."

E. L. SHUCK.

HANDLING A "WAR-ORCHARD."

THE peach is one of our most perishable fruits; not only in the length of time it can be stored but also in the way it must be handled in harvest. This is especially true when the fruit must be taken several miles over a mountainous road to the shipping point. This was well impressed upon me last summer while doing my "bit" in food production.

Just as peaches were ripening I became superintendent of one of these mountain orchards which was just coming into bearing and was located about 5 miles from a railroad station. Arriving at the orchard we found the future was all before us; no plans had been laid for the coming harvest and the owner was bankrupt. Fortunately we were able to use part of the equipment of the company's main orchard. And then when more than busy in the main orchard we planned emergency measures for the handling of this fruit.

Some temporary measures had to be taken at once. A tent was ordered for a packing shed but extra help for the harvest could not be secured locally. Other orchards had picked up every available man. At first we thought of getting girls to help in grading and packing the fruit. Failing in this we secured some transit labor to help us. They were a good-natured class and worked well when supervised. Our biggest problem was to get the fruit out of the orchard. An excellent dirt road led to within one half mile of the orchard. That one half mile was a lumber trail; rocky, steep, and only passable with a load one way, downward. After hauling them over this trail, then sort-

ing to remove bruised fruit, they could be loaded on the truck and easily taken to the station.

Then came the rush of the peach harvest. The salable fruit was easily handled, most of it going into local markets. The culls and bruised fruit were different. Especially the latter must be handled quickly or it spoils. Unfortunately there were many of the latter, due to the haul down the mountain. To make matters worse it hardly paid to haul this fruit out of the orchard. Some of it was sent to an ice-cream manufacturer but spoiled before reaching him, altho enroute but 12 hours. What was to be done? Every available man was busy getting the salable fruit out. We had equipment for canning peaches but no time to use it. So we hired a neighboring family to do the work for us on the share plan. They made some of the fruit into peach butter but that took sugar. Most of the fruit they canned without sugar, and toward the last of the season they dried some. Finally as an experiment we had several barrels of peach cider made. This changed quickly into vinegar—too quickly to please some of the men.

And now as I look over the past season's records, the thought comes to me that there are doubtless many similar orchards in Ohio. Perhaps there are some in your home community which need only some emergency measures to render them productive. The above enterprise was only moderately profitable to this orchard company, but several thousand baskets of fruit reached the market which otherwise would have gone to waste.

BROOKS D. DRAIN.

John T. McClure, '16, is teaching in the high school at Lancaster, Ohio.

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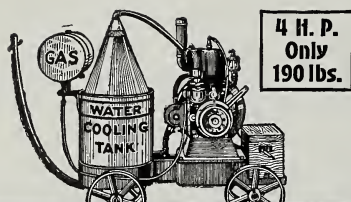
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NEWS NOTES.

Omer C. Cunningham, assistant professor of dairying at Ohio State University, has accepted a position with the Food Administration at Washington, D. C.

Townshend Agricultural Society held an open meeting in Townshend Hall on March 4. Talks were given by L. O. Lantis of the rural economics department and Prof. Schuyler M. Salisbury of the animal husbandry department. Tom C. Stone of the latter department gave some readings. Refreshments were served to about 60. Several new members were taken into the society.

George B. Stout of Delaware won first place in the judging contest held at the judging Pavilion on March 9 for the freshmen of the three year course. His name will be engraved on the loving cup presented to the animal husbandry department by the graduating class of the three year course for this event. It is the first contest of this nature to be held at Ohio State University.

Harold W. McChesney, '17, who was circulation manager of the Agricultural Student last year, was married on March 6 to Miss Anna V. Albright of Akron. They are now at home on their farm near Akron, where he has already started a herd of pure bred Durocs and Holsteins.

Forest W. Dean, M. A., '17, is with the 10th Regiment of Forestry Engineers "over there." He writes, "Our regiment is making a fine record. The saws are buzzing day and night for victory. My best regards to The Agricultural Student and all of its readers."

Thomas L. White, '17, has charge of the horticulture work on the Circle W. farm at Chesterland, Ohio. Karl F. Eichorn, '14, has charge of the livestock on the same farm.

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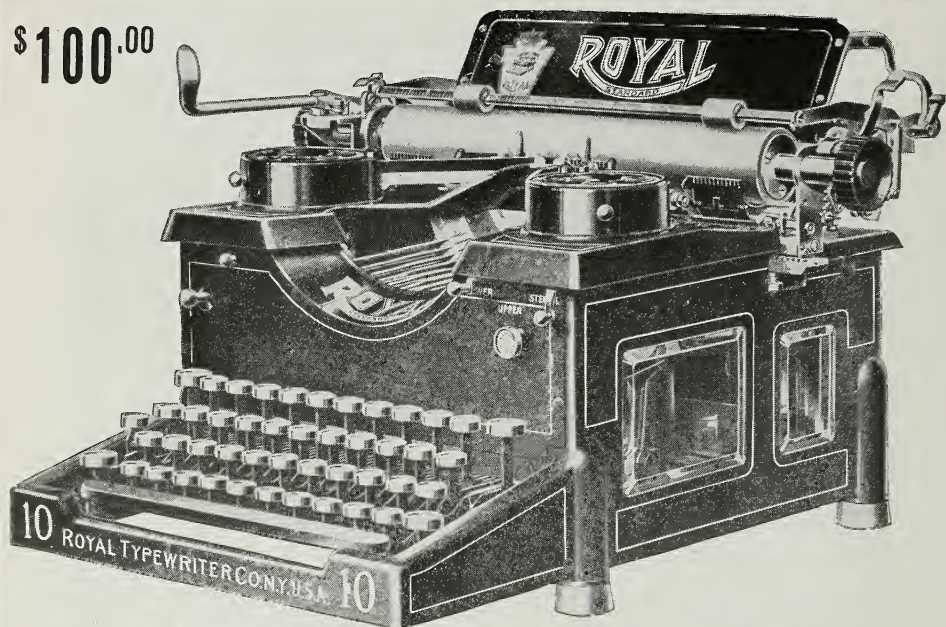


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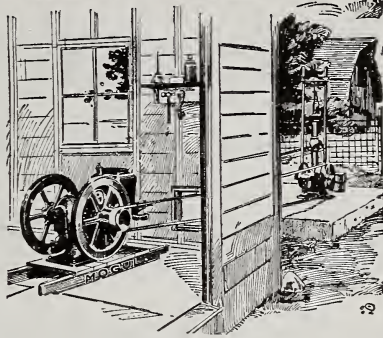


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